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REV. A. H. BLAKE

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THE "OVAL" SERIES

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BEING
SIMPLE CHAPTERS FOR BEGINNERS
ON THE ART AND PRACTICE
OF PHOTOGRAPHY

BY
REV. A. H. BLAKE, M.A.
LATE RECTOR OF QUARLEY, HANTS
WARDEN OF S. THOMAS DIOCESAN HOUSE OF MERCY, BASINGSTOKE

With Illustrations

THIRD EDITION

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PREFACE.

Let this little book claim nothing more than to be a porch to the larger works now in circulation: it aims at giving a little practical help to the beginner at the very outset to carry him over a few initial difficulties; and then both in the science and art of photography he must go to the more extensive and expensive text-books for further assistance.

My thanks are due to the courteous editor and proprietors of the *Amateur Photographer* for permission to use in a somewhat altered form one or two chapters that have already appeared in that excellent journal.

A. H. BLAKE.

Quarley Rectory,
Hants.
November, 1898.

PREFACE TO THIRD EDITION.

The reception which this book has met with at the hands of the press and public has been most kindly. Some alterations and additions have been made.

A. H. BLAKE.

Basingstoke.

February, 1899.

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PART I.

CHAPTER I.

MAKING A START. APPARATUS.

We do not propose, in this brief work, to waste any of our own time or that of our readers by going over the oft-told tale of how photography came to be discovered, who were the pioneer workers, and how far things had got in such a year.

This may become very interesting, and may engage the attention of the learner later on in his photographic career or it may not, but our present business is to make a start in photography with as much despatch as possible, and not to waste time in what will be to us at present not very profitable reading.

We will presume then that we are at the elbow of one desirous of making a beginning in practical photography, and we say "Of course the first thing you will require will be some sort of apparatus."

In view of buying the camera the questions to be answered will assuredly be "What sort of camera shall I get? Where am I likely to find it, and how much will it in all probability cost me?"

As to what sort of camera; we should have first to determine between new and second-hand instruments. We are personally strongly in favour of a second-hand apparatus to begin with. It is often possible to get quite a nice instrument second-hand for the price which we should have to pay for an inferior article new, but it is only fair to warn the inexperienced that unless he has at hand a really competent friend to advise him, he may burn his fingers rather severely in these second-hand transactions. There are, however, certain firms in whose hands the reader would be perfectly safe, and whose title we should be happy to supply to any enquirer.

So we say if you have a friend at hand, or can go to a really reliable firm, by all means buy second-hand, but *if not* then go to a good responsible maker and trust him to supply you according to your needs and the length of your purse. Even in this matter we are sure that the editors or staff of any of the photographic papers, who are a most long-suffering brotherhood towards the amateur, would give him advice or even examine apparatus for him.

The next question is that of size, and here quite definite advice can be freely given. You must begin with a size certainly not larger than 7½ by 5, and preferably the modest quarter-plate; for you have much experience to gain before you will be able to expose and develope with any degree of accuracy, and in getting this experience you will have to waste many dozens of plates and packets of paper, so that unless you have a very long purse it will be advisable to do your wasting on the small and less

expensive material. Plates of good make of the quarter-plate size can now be freely got for 1*d.* each, while good plates of 15 by 12 may cost as much as 3*s.* *a piece.*

You can get a good deal of practice out of a quarter-plate for the price of one 15 by 12: we will suppose then that the size is to be a quarter or half-plate.

There are what are called certain "movements" in all modern cameras which are not absolutely essential; yet no one now-a-days would purchase an instrument without these conveniences, so see that your intending purchase has them.

"Reversible back."—The frame in which the ground glass focussing screen of the camera is placed takes out and reverses without moving the body of camera, so that it will be possible to take upright or "longways" pictures with equal convenience.

"Swing back."—This means that the back of the camera is hinged and not rigid, so that when it is necessary to tilt the camera in any way the back may be used to render upright lines in picture as seen on the ground-glass screen parallel to the sides of the camera.

"Rising and falling front."—The panel and lens can be raised or lowered so as to include more foreground or more sky in the picture without tilting the camera up or down or moving the general arrangement of the picture.

Each camera should be accompanied by three wooden boxes for holding the plates to be exposed. These are known as dark slides, and it is of the utmost importance that they should be of good workmanship, should have the shutters sliding securely and freely in or out, and should be perfectly light-tight.

With the camera must also be obtained the tripod head

and stand. The tripod head need not be very large or cumbersome, but it should be firm and strong and the legs should be three-fold, the bottom one of the three folds not turning over but sliding into the middle joint.

This may seem a small matter to insist on, but much after convenience and comfort will be obtained from it when working on uneven ground.

If it be important to see that we have all that is really necessary and of good quality when purchasing the body of the camera, of far more importance is it that our lens should be from a good maker and free from the faults to which inferior lenses are subject.

Our first advice must be to go to a good and recognized maker. Lenses are to be obtained for as many shillings as reliable firms charge pounds, but they are not to be trusted. The name of Dallmeyer, Ross, Wray, Taylor, Taylor, & Hobson, not to mention many other firms, are a guarantee of good workmanship, and we are perfectly safe in buying their lenses.

Lenses are of three main types. The Rapid Rectilinear, the Wide-Angle Rectilinear, and the Single Landscape lens. We do not propose to trouble the beginner with the construction of these different instruments (all that will come in time) but simply to point out the uses of these different types, and to give him our recommendation in the matter.

First, the Rapid Rectilinear, or Rapid symmetrical lens, is the most generally useful. It is corrected for spherical aberration, and gives straight lines all over the picture, and should give an image in fair focus all over with the open lens. It is manifest that this lens will do for use whether the beginner means to take up portraiture, groups, architecture (where straight lines are all-impor-

tant), or landscape, where the straight line is not so very essential.

The Wide-Angle Rectilinear encloses a much larger angle of view than the RR type, and so is most useful in confined situations where otherwise some portion of a building or view, which it is desired to get upon the plate, would have to be left out. These lenses are, however, apt to give distortion and disproportion unless used with judgment.

The Single Landscape lens is *par excellence* the lens for the pictorial worker. It does not work so rapidly as the RR, but except in extreme cases this is not a matter of great importance to the landscape worker.

Now the beginner, in purchasing a lens, must be guided by the kind of work which he intends to do. If he is going in for all-round photography, and wants to take anything and everything, his friends, the church, the landscape, he had better get a RR, and if he can afford it add also a Wide-Angle Rectilinear for confined situations. If, on the other hand, he intends to be a pictorial worker, and wants to use his plates as his medium of artistic expression, then the Single Landscape is the lens for him, and he is at this advantage, that the price which he will have to pay for it will be considerably less than that for one of the RR type.

Having got a lens, the next thing is to take care of it. He should therefore forthwith get some of the lady members of his household to make for him a wash-leather bag in which to keep it; and he must see that in the bag *it is* except when in use.

Lenses are especially liable to be injured by scratches from rubbing with a rough cloth, and so the very softest and smoothest of material should be used for dusting them.

One hint only in conclusion: the possessor of a RR

lens is, if he only knows it, the possessor of a single lens too, for by unscrewing one of the combinations of his Rectilinear (and putting it safely away) he will have left a Single Landscape lens of about double the focal length of his full lens. He will, however, most probably find that unless his camera is one which racks out to a very full degree, he will have to have constructed, at the price of about 10*s.* 6*d.* to a guinea, a chamber to fix in the front of the bellows of his camera before he can get objects in proper focus; but the additional power which he gets in thus being able to get distant objects of twice the size they would be with the RR used with both lenses, is well worth the price paid for the extension front.

CHAPTER II.

EXPOSURE.

We now approach a branch of our subject which it will be of the utmost importance that the beginner should understand at once, as it will save him much trouble and expense to have grasped at an early stage the principles which lie at the root of the correct exposing of the plate. The tyro has the camera in position, the view focussed according to his taste, the dark slide in its place, and its shutter drawn out. He now waits with his hand ready, and the question is, "How long shall I expose?" Now as a rule, for months at least, this is done at haphazard by the beginner, he takes off the cap and trusts to luck; and it has been computed that as a matter of fact he has often been known to expose the plate many thousand times too much. A friend of ours was consulted by a lady as to the unsatisfactory character of her negatives. "How long did you expose this one?" was the query. "Five minutes," was the reply. "Had you exposed it for one-fifth second you would have been nearer the mark." Taking all this into consideration we will endeavour to explain the principles of exposure, and to give some simple rules for guidance on the matter.

One of the chief elements in exposure is—the distance of the object from the camera. As a rule the further off the objects to be photographed, the shorter should be the exposure. The nearer they are the longer will the cap require to be removed. Mr. Howard Farmer, of the

Royal Polytechnic Institution in Regent Street, has drawn up a table which is most helpful in this matter. We append it here with explanations.

Given an instantaneous plate, such, for instance, as Wratten's middle rapidity, the open lens and blue sky and white clouds, the exposures at the different distances will be roughly as follows. First, near subjects:—

Up to 10 feet ... ... one second.
10 feet to 30 feet ... ... half-second.

Distance is always reckoned from the camera not to the nearest important *object,* but to the nearest important shadow, because that is what you require to get out: the high lights must take care of themselves.

If things are required much nearer than 10 feet the exposure must be proportionately increased. Nearer subjects require so much more exposure because the shadows are heavy and there is so much more detail to be registered.

Subjects entirely in sunlight may be reckoned at one-eighth second.

Secondly, moderate distances (from 30 feet to 100 feet) the exposure will be one-quarter second; from 100 feet to 100 yards one-eighth second; from 100 yards to one-quarter mile one-sixteenth second. Objccts entirely in sunlight one-sixteenth second.

Thirdly, long distances. One-thirtieth second will be the exposure, and they should always be taken in sunlight, unless for special purposes of effect you wish it otherwise.

These exposures are for average subjects, so that when a picture is to be taken we must ask ourselves whether it represents either, an unusually dark, or an unusually light subject, as in the first case the exposure, to make up for

the more than ordinary darkness of the subject or depth of the shadows may have to be prolonged to twice or even four times the normal exposure. On the other hand, if the subject be unusually light, or comprise only a very small quantity of shadow, the exposure necessary may be only a half or a quarter that required by an average subject.

Another factor in the exposure will be the height of the sun above the horizon. Mr. Farmer computes that when the sun is more than thirty degrees above the horizon we need not make any special calculation regarding it, but that if it be between twenty to thirty degrees from the horizon we shall require to double the exposure; from twelve to twenty double again; from six to twelve double again.

We shall also in estimating our exposure require to understand the stops, as the small discs are called which work in the lens, and the use of which we now explain. The open lens, F. 8, is that with which, to commence with, we supposed ourselves to be working; but when we require to use smaller apertures, so as to get increased sharpness of image, what then? The rule is that each smaller stop used practically doubles the time needed for exposure. If F. 11 be used instead of F. 8 we must double the exposure. If F. 16 we must quadruple it, and so on.

Allowance must be made for days when the initial conditions, viz., sun or blue sky and white clouds are not obtainable. Dull days increase the exposure twofold: very dull fourfold. It will very seldom be necessary to have a greater increase than this for the intervening clouds, though mist or fog may require an even larger allowance.

We should recommend the beginner to have a small note-book, suitable to the jacket-pocket, in which these various points to be considered in exposure are tabulated for easy reference. The same book will be used to enter our exposures, and will become a valuable record of our work and experience. When about to make an exposure, although it may seem very mechanical to some, we should make a sort of compound fraction sum as follows. Say, distance from camera one-sixteenth, nature of the subject light, medium dark shadows, multiply by two, stop F. 16, multiply by four. Weather dull and overcast, multiply by two. So that our original estimate will work out something in this manner:

$$\frac{1}{16}\times\frac{2}{1}\times\frac{2}{1}\times\frac{4}{1}\times\frac{2}{1}= \text{exposure 2 seconds.}$$

This seems a very cut and dried manner of working, but the present writer has proved its accuracy again and again. He and a friend who used an exposure meter well esteemed for its accuracy, have compared the conclusions arrived at by their respective methods, and they were for the most part identical. The time taken to make these calculations is very short, and the gain in certainty of exposure immensely valuable.

We should like before closing this chapter to emphasize the extreme importance, from the point of view of steady and continued progress, of keeping this register of all exposures made: it prevents haphazard work; it shows failures and teaches the lesson of their reasons, and is at all times a most useful book of reference in times of difficulty and uncertainty.

It should be a book not only large enough to record the name of the lens, maker of plate, size of stop and other

details generally given, but to allow of other even more important matters being noted. For example we take at random a page out of one of our field note-books just to show the sort of notes which will be found of lasting use to the picture-maker.

"Walberswick, June 24th. The Subject:—Last Gleams. Water in Creek at low tide. Taken at 7 p.m. just before sunset, fairly strong light of setting sun from right hand side, exposure 1 sec. open lens. Clouds suggested by subject, cumuli on horizon just edged with light from setting sun."

Here it will be noted that there is very little of the usual information to be found in exposure note-books, but a certain amount (not so much as there ought to have been, perhaps) to help the taker of the negative to get the picture which he saw when he made the exposure.

Having thus the main idea and the various component parts of the subject as a guide, it was worked upon these lines till a fairly satisfactory result had been attained, for the picture was awarded a silver medal at Leytonstone the first time it was exhibited.

But not only should the note-book be used to record actual exposures, but if carried about when on tour or for a walk, even when the camera is not present, and if in it are noted various effects, rough sketches of pleasing poses observed, the pleasant lines of landscape, cloud forms which seemed to promise usefulness, etc., etc., we shall have a valuable record of our observation of nature and a mass of information which will be extremely useful for reference even if we do not bring the camera afterwards to "take" what we have before observed and recorded in the book.

We should recommend the tyro very strongly to master

the principles of exposure here laid down, and to work in this matter by rule. He will find that average certainty of result is a great gain, and we would certainly also press the keeping of such a record of our pictures as we have indicated, feeling sure that it is by this steady, purposeful, and regularly recorded work that the photographer learns not only the technique of his art, but also that long observation of Nature and her effects which should be and generally is characteristic of our best workers in the photographic world.

CHAPTER III.

THE QUESTION OF THE DARK-ROOM.

It will be of no avail for the beginner to be ever so diligent in the field if he has no place at home where he can develop his plates, and so almost co-incident with the buying of a camera will be the construction of the dark-room.

A word of warning is not out of place here as to where the dark-room is to be located. It is quite true that the most unhealthy places are used by the beginner for this purpose. Considerable expense is not grudged for the camera, the lens, and the outfit generally, but any place will do for the dark-room—any hole and corner even down to "the dark cupboard behind the back-stair," entirely without any holes for ventilation, and calculated to give the strongest person a headache when the thundering of Mary Jane as she thumps up and downstairs combines with the smell of the small oil lamp, with its red glare, which is the only source of illumination.

If photography is going to be a real and abiding pleasure in our lives, and not a nine days' wonder soon cast aside, then we *must* see to it that we have a properly fitted-up and well ventilated dark-room, both for the sake of our health and the excellence of our results.

Having selected a room which can be entirely given over to the purpose in hand, we next proceed to go over it with a local plumber to see where water supply can be brought in, and how the waste can be successfully carried

away; also, if we intend to use gas, that the room is near enough to some pipe to bring the supply into our room.

Having settled these points, the next is to select a dark-room sink: these are cheap enough, and can be procured from any well-known dealer; only let your sink be large enough and deep enough for the plate you have to use.

Do not allow the waste from your dark-room sink to run into the other waste of the house, as evil smells are said to be thus originated.

A swing rose-tap should be procured to cause a spray in washing plates.

The next important point to be considered will be the dark-room lamp.

We are distinctly of opinion that the lamps in use in most of the amateur dark-rooms with which we are acquainted are too small and give far too little light. It is not the least necessary to work in almost total darkness and with only a faint red glow (which, by the way, often induces nausea and headache) as the source of illumination. It is quite possible to work with a light in which all articles in the dark-room are distinctly visible, and yet to have no possible danger of fogging the plates.

Many excellent lamps are for sale on the market; only if you buy one let it be large, and give plenty of safe light.

If on the other hand you desire to make your own, and many of the best workers we know have adopted this course, we append full instructions for so doing.

We shall call in the aid of some working carpenter.

We are taking it for granted that artificial light will be used, as even where engagements permit of developing being carried on in the daytime the variability of the light is such a drawback that we should prefer to use the arti-

ficial light by day or night. Whether we use gas or lamp illumination is a matter of indifference, though the latter is preferable from a sanitary point of view, so we will assume that the source of light is to be an ordinary duplex lamp.

It will be necessary to procure a small packing-case, about 18 inches by 12 inches, minus the lid, as the basis of our home-made lamp. Stand it on end. The enclosed portion will now make the back, sides, and top and bottom of our lamp, and to the open portion will be affixed the front of the lamp and screens of yellow and red glass or fabric.

In one of the sides cut a hole sufficiently large to allow of the introduction of the lamp, and fit to the aperture thus made a door of blackened tin, with a ruby glass window in it fastening with a bolt, but larger than the aperture, so that when closed all light will be prevented from escaping from the inside of the lamp into the dark-room.

In what will now be the top of our box as it stands on one end we make a round hole capable of receiving a chimney like that of a magic-lantern, which will carry off smoke and yet keep light from filtering through.

If we have a lantern, to save expense, we may as well use the funnel from that when not wanted elsewhere.

Some holes for ventilation must be bored in the bottom of the box.

All is now complete, except the front, through which our light for developing is to be filtered.

Some grooved wood is nailed to the front of the box to receive the screens, two yellow ones and one red, while a piece of japanned iron is fastened to the top and so hinged that it will drop down and cover the slots into which the screens are slid.

It is well to fasten some side pieces to the front of the box, so that the light may be directed downwards on the plate.

You will require two screens of yellow fabric and one of red glass. The two yellow screens will be perfectly safe for ordinary plates, and the one yellow with the red glass for isochromatic.

This form of lamp will be found extremely simple, economical, and effective, and far more comfortable to work by than many commercial lamps costing far more and not giving so safe or so full an illumination.

It is supremely important, from the point of view of health, that you should provide some proper method for the escape of the fumes of the chemicals employed. Your local plumber will no doubt advise you as to how to render your dark-room safe in this respect.

You will now require to block out all extraneous light. We should strongly recommend that the window of the room be not fastened up permanently, but that a frame-work be constructed to bolt over the window and exclude light at the time of development: this can then be removed when the work is done, the window and door opened, and a free current of air allowed to blow through the room.

It will not do to trust to your workmen for the safety of your dark-room on the score of extraneous light; when *they* think that all light has been excluded, go inside, fasten up your window screen, shut your door, and wait a few minutes in the dark, and most probably you will soon discover chinks and cracks here and there, admitting stray light, which you will proceed to cover up with strips of brown paper and paste.

The present writer has been in the habit on his summer holiday of fixing himself down in one locality for

five or six weeks at a time, and during the first day or two of his leisure has proceeded with the local carpenter to fix up some room or outhouse as a temporary dark-room, and so he knows from frequent experience *how* many chinks and cracks are to be found in any ordinary room or outhouse, and how to apply the brown paper and paste with patience to the parts affected.

Some shelves will be required for the storage of bottles on one side of the room, and another just over the developing sink for those in frequent use in developing.

We should recommend that a shelf be provided *under* the sink for the hypo dish, and that it be always kept there, if those accidents which always happen even in the best regulated families are to be avoided.

It is a great convenience to have a chair of sufficient height to allow one to manipulate with ease at the developing sink, as it is rather a back-breaking process to be bending for an hour on end over one's plates without any support, requiring what one's gardener described as the best sort of spine for his kind of work, "a cast iron back with a hinge in it."

Nothing has been said at present as to the cost of all this, and no doubt to the average amateur this is a matter of importance, and he will not be inclined to follow our instructions unless we can assure him that he will not be let in heavily thereby.

We have looked into the accounts which we have paid during successive holidays for the fitting up of the dark-room necessary on the tour, and we find that, exclusive of the lamp—we always take a Lancaster Rubralux on tour—the cost has never exceeded ten shillings for fitting up all that was necessary, though, of course, sink accommodation is not included in this figure.

We should say that £3 would be well expended in making a comfortable dark-room; many of the necessary things can be made by the amateur himself if he is "a handy man," and only the sink fitting, ventilation, and such like done by the local tradesman.

It is, however, a pity to try to get things which are necessary to health and well-being done too cheaply, and this certainly applies here, for to have matters relating to drainage and ventilation improperly carried out, owing to the estimate being too low, is not only penny wise and pound foolish, but health-foolish too.

A few words in conclusion in this chapter as to the solutions required in the dark-room, so that we may be free in the next chapter to speak about development pure and simple.

A good supply of hyposulphite of soda will be needed; so let us at once make a good stock of that necessary article in solution by taking a lb. of hyposulphite and putting it into a Winchester quart bottle and filling it up with water, when we shall have 80 oz. of fixing made and ready whenever we are developing plates.

We must also purchase the following articles and drugs.

3 10 oz. bottles with medium size mouths and glass stoppers.

A 4 oz. measure.

A minim measure.

4-6 vulcanite or composition white quarter-plate-dishes.

A box of scales and weights for grams and grains.

3 oz. metabisulphite of potassium.

2 oz. Shering's pyrogallic acid.

3 oz. bromide of potassium.

3 oz. of liquor ammonia ·880.

7 lbs. hyposulphite soda (1*s.*)

Taking the first of the 10 oz. bottles we label it "Pyro Solution," and place in it 1 oz. of the metabisulphite of potassium and a little water. Now take one of the bottles of Shering's pyro, remove the metal cap and extract the cork, and then pour an ounce or two of distilled water into it, replace the cork, and give a shake or two till it is all dissolved, which will happen very quickly; pour the solution into the 10 oz. bottle containing the metabisulphite, and fill up with distilled water.

Take the second 10 oz. bottle and put into it 1 oz. of bromide of potassium, and fill up with water, and label "Bromide Solution."

Take 10 oz. bottle number 3, and pour into it 1 oz. by measure of the liquor ammonia and fill up with water, and label "Ammonia Solution."

We have now all the solutions ready mixed for our dark-room which are necessary for the developing and fixing of the plate, operations which we shall proceed to explain in the next chapter.

CHAPTER IV.

DEVELOPMENT.

With an exposed plate in our dark slide, and the chemicals, as explained in the last chapter, mixed upon our shelves in the dark-room, we now proceed to explain to the beginner what is known as the process of development, by which the image latent in the plate is brought out to view.

For average subjects we shall take from our stock bottles as follows:—

About 60 minims of pyro solution.
30 minims of bromide solution.
30 minims of ammonia solution,

in our 4 oz. measure, and fill up with water to make 2 oz.

Shutting the dark-room up now from all extraneous light, and closing the door of the lamp so that no light is admitted except that which filters through the red glass screen, we take our dark slide in hand and extract an exposed plate. Pass lightly over it a broad camel hair brush, and place it face upwards (the side which does not shine and glitter as it is moved in the light of the lamp is the face) in the developing tray. Now take the measure containing the developer in the right hand, and with a sweeping motion from right to left pour it over the plate, at the same time commencing to rock the dish, and be

very careful to see that every part of the plate is at once covered by the developer.

Now gently rocking the dish so that the developer flows evenly over all the plate, wait for the appearance of the image, which will begin to show itself by the blackening of the high lights; then the appearance of half-tone, and finally of the shadows; and if the negative has been properly exposed these should be gradually built up in the order named; till when the shadows show sufficient detail the high lights should not be too dense for proper printing.

Most probably, unless our negative has been much over-exposed, the amount of ammonia which we mixed with our developer to start with will not be sufficient to bring out the image, so if after waiting for a few minutes nothing appears, we proceed to add 10 to 20 minims more of ammonia, and then rock and watch again.

Here, after speaking of the addition of the ammonia to accelerate the action of the developer, is a proper place to explain the action of the three constituents necessary for development which we have in our three 10 oz. bottles.

No. 1, the pyro, is too slow in its action to be used alone as a developing agent, and so it requires the ammonia to render it energetic enough to work quickly. The ideal proportions of these two are equal quantities of one and the other in the developer. Too much ammonia gives a weak flat image; too much pyro, Mr. Howard Farmer tell us, is wasted, and the excess even acts as a restrainer, and retards the action of the ammonia. No. 1, then, the pyro, is the density-giving, the blackening agent.

No. 2, the bromide. This is the restraining agent.

It keeps back the image, and prevents it from flashing up and getting out of our control. It throws the density on the high lights, and gives a negative with sharper contrasts. It also keeps the image clean and transparent, and free from developing fog.

No. 3, the ammonia. This is the accelerating agent. It makes the development proceed more quickly, and in excess gives a weak negative. It serves to bring up detail in cases of under-exposure, and prevent a too chalky negative. If too much ammonia be used the image rushes up, the result is weak and foggy, and printing density is to a great extent wanting.

Some people recommend the beginner to try one of the ready-made developers with which the market abounds; but it is manifestly most unsatisfactory to work with a mixture of which we do not know the component parts, and of whose action we are ignorant. Working in the way we have advised, the beginner, though he may fail for a time in successful manipulation, at any rate knows what he is doing, what he is using, and the operation of the different materials of which his developer is composed, and he can add to his developer more of those ingredients which will tend to correct the faults which he notices in his negative as development proceeds.

But now, after this excursion into the consideration of the action of the developer, to return to the actual operation itself which we were describing.

The addition of the ammonia will probably cause action to begin soon: as we look at the virgin expanse of our plate we notice a portion, probably the sky (or a white dress or the face in the case of a portrait), beginning to darken. If the half-tones then begin gradually to darken too, and keep their relative density to the high lights, all

is going well, and the detail in the shadows will gradually appear, and be out by the time the high lights are ready too.

And this is our object, viz., to procure a negative which shall give the proper relation between the different tones when it comes to be printed from.

When this all-important point is assured, we may either continue our negative in the developer for some time, so as to get a dense negative, or remove it sooner and get a thinner. Which of these two courses is to be pursued will depend upon the kind of negative, thin or dense, which suits the printing process which is to be used for it. Any one who studies articles in the photographic press will find those from time to time which explain the different properties of sensitive papers and the kind of negative suitable to each, and this will help the beginner to know what kind of negative he must aim at to suit his printing process.

So far with regard to the development we have been considering the case of a correctly-exposed plate, but it will often happen, and especially to the beginner, that he has grave fears, and justly, that his plate is either greatly over-exposed or vastly under-exposed: how then is he to proceed to develop such a plate?

Take first the case of over-exposure. Now how is the beginner to proceed to develop such a plate? First, the composition of the developer must be altered to suit the altered conditions. It will be remembered that bromide retards the appearance of the image, and throws the density upon the high lights relatively to the shadows. The faults which we shall expect to find in an over-exposed negative are flatness, want of vigour, and general weakness all over, with plenty of detail, so it will be

evident that we must increase the bromide, and slightly also the pyro, and keep down the ammonia; the composition of our developer therefore will be more after this fashion:

No. I.	...	...	...	normal.
No. II.	...	...	...	more.
No. III.	...	...	...	normal.

But if the operator does not know that the plate is over-exposed, and the fact is sprung upon him, so to speak, by the sudden appearance of the image, what is to be done? He must immediately pour off the developer, wash the plate well in several changes of water, and proceed with the developer as amended for over-exposure.

Now take the case of under-exposure. Let it be stated clearly to begin with that this is by far the worst case of the two. We can often make a very passable negative of an over-exposed plate, but an under-exposed one seldom produces anything much worth preserving. Still it may be necessary in the case of a plate of which we cannot get a duplicate, to make the very best we can of a bad job. The fault we shall expect in an under-exposed negative is that though the high lights are sufficiently exposed and answer up well when the developer is applied, and even the half-tones come up fairly, the detail in the shadows hangs fire altogether, and the proportionate tones of half-lights and shadows are entirely thrown out of relation.

How, if these faults are to be expected, is our developer then to be composed?

Manifestly we wish to bring out the detail in the shadows more rapidly than usual to prevent the high lights being overdone before shadows come up, and

ammonia being the accelerating agent, we shall require to increase that constituent of the developer.

The composition of our developer to suit our negatives will now be somewhat as follows:

No. I.	...	...	normal.
No. II.	...	...	normal.
No. III.	...	...	in increased quantity.

Though there are many developers in the market (all advertized as of exceptional value), and you will from time to time meet with friends who have achieved most excellent results with other developers than the one you use: do not on any account keep changing, but stick to the one you have until you have thoroughly mastered it, and know all its possibilities, and then, if you still wish it, will be the time to try experiments with others; but after all there is hardly any one of the new developers that for all-round work will compare with our old friend "pyro," and certainly there is no other that will enable the operator to have so much control over development in cases of over and under-exposure, where it is necessary to alter the constituents of the developer to suit the case at hand. Hydroquinone will give wonderfully brilliant negatives, eikonogen will give splendid detail and soft and harmonious gradation, and "eiko-cum-hydro" finds favour with many, but after all said and done, many who used them are returning to pyro again for general work, and never find it fail.

We should say that the ideal proceeding would be, when the worker is perfectly proficient in the use of pyro, to have other approved developers made up for special cases, the use of which he has thoroughly mastered, and then he would be ready for any and all emergencies.

After the plate has been developed, it is washed for

a few moments in running water, and then placed in the solution of hypo. When all the white appearance has disappeared from the plate, and a few extra minutes have been allowed for complete fixation, the negative is washed for two hours in running water and set up to dry.

CHAPTER V.

SOME PRINTING PROCESSES.

THE beginner has now learnt in some degree how to put his apparatus together, to give an approximately correct exposure, to develop with a certain measure of success, and to prepare negatives; and this brings us naturally to the question of printing: what processes there are, and how they are worked?

We suppose that the first and easiest process, and the one which in these days the beginner will first learn, is the gelatino-chloride. This is obtainable in cut sizes from different makers, *e.g.*, the Eastman Co., the Ilford Co., and others. Taking one of our printing frames we lay it face downwards on a flat surface, loosen the springs, and take out the back.

We now select our negative, and having cleaned the glass side with a little "Monkey Brand," we place it glass side downwards in our frame, open a packet of paper, and taking out a sheet place it with the prepared or shiny side downwards on the negative, put in a pad of felt or indiarubber, then the back of the printing frame, and fix the springs.

We now expose the frame to a subdued light (unless the negative be a very dense one) till it is somewhat darker than we should like to see it when finished, judging by the shadows; we should consider, if the negative be one of proper gradation, that when they begin to be

blocked up slightly the printing is deep enough. We then remove the print from the frame to the storage pressure box (which may be procured at any dealers), and then continue to make other prints until we have as many as required.

We now make our arrangements for *toning* the prints: they come out of the frame a somewhat unpleasant colour, and we wish, by placing them in certain baths, both to alter the colour and render them as permanent as may be.

There are as many toning baths as there are pages in this book, so it will be manifest that we cannot do more than describe those processes which we most believe in personally. We shall in the first place give directions for what is called the platinum toning of Gel. Chloride prints.

When the prints are taken from the storage they are first of all washed in several changes of water till all milkiness has disappeared; they are then put into a bath of common salt (1 oz. to 20 oz. of water) and are ready for the toning.

The bath is composed as follows (we give Mr. Kidson Taylor's formula, and are indebted to him for many hints on the working of these papers):

Chloroplatinate of potass (Harrington's)	5 grains.
Sodium chloride (common salt) ...	50 grains.
Citric acid	50 grains.
Distilled water	30 oz.

This bath can be used again and again by adding extra chloroplatinate as required.

Toning in this bath should be proceeded with till a warm chestnut colour is reached.

When the toning is complete, the prints are placed direct into a bath of carbonate of soda (half-oz. to 40 oz.

of water); in this bath they all remain till the batch of toning is finished.

From the carbonate bath we transfer the prints direct to fixing bath, which will be made up as follows:

Hyposulphite of soda	4 oz.
Sulphite of soda	2 oz.
Water	40 oz.

to which has been added one drachm of liquor ammonia ·880. After twenty minutes in the fixing the prints are to be thoroughly washed for an hour in running water or in several changes, and then placed face upwards on quite clean blotting-paper to dry.

The great secret of success in working Gel. Chloride is strict adherence to instructions and perfect cleanliness in all the manipulations. If these are observed perfect success should be attained, as the paper is most carefully manufactured, and of wonderful uniformity in excellence.

We now pass on to speak of another printing process which the beginner will be sure to use as soon as he is able to do well with gelatino-chloride, and wishes to vary the colour and the surface of his print. We refer to the platinotype process.

Many workers are deterred from using this paper by an erroneous idea that the process is very difficult to work; and that as it does not print out a very visible image, therefore it is hard to tell when printing is complete. The working of the process, especially since the introduction of the cold bath, is in reality easiness itself, and the determining of exposure will not, with a little observation and patience, delay the beginner long.

We will suppose then that the beginner has procured a tin of paper, and has ready the negative from which he wishes to print.

Let him first see that the negative is quite dry, likewise the printing frames, providing himself also with pads made of indiarubber to go between the paper and the back of the printing-frame. Then taking a piece of the platinotype paper from its tin, he will place it with the yellow side towards the negative, being careful to keep well away from the source of light; because this kind of paper is much more sensitive to light than any other kind which he may use, and the mischief will not be discovered till the development takes place, and the result is a failure.

It will be somewhat difficult for the beginner to determine when a platinotype print has been sufficiently exposed to light, but he will soon learn to judge with a little practice.

The Platinotype Co. have recently prefixed to their list and instructions two illustrations which will be found extremely useful to the beginner. These represent a fully exposed print before and after development, and by comparing the former with his own print the worker will soon be able to judge if it has been sufficiently exposed.

We should recommend that one negative of average quality should be experimented on until proficiency is attained, and the eye gets accustomed to the appearance of a fully printed proof.

The bath is now to be prepared, and as full instructions are given for this in the Company's own note-book it will not be necessary to repeat them here.

The bath is placed in a dish a size or two larger than the print to be developed, and all is ready.

Taking the print from the frame or storage tin, and holding it by opposite corners, we put the nearest corner on to the fluid, and then gradually lower the whole print,

immediately taking it up again to see that there are no air bubbles, which we must touch at once with the extreme point of the finger, and apply the whole at once again to the fluid, and the bubble spots will catch up the other parts, and the whole be developed together.

When the exact result required has been obtained, the print is at once plunged into dilute acid bath as given in the Company's instructions, and the next print proceeded with.

The whole having been passed through several acid baths, are well swilled in water and hung up to dry.

We do not propose here to speak of the carbon process, as the beginner will hardly require to use this till he is able to dispense with a first handbook like this, but let it not be considered that therefore the carbon process is one of exceptional difficulty, for such is not the case.

The matt silver paper of the Blackfriars Photographic Co. will be a good investment for the beginner who wants to discard the shiny surface of a gelatino-chloride print, and he will find it fairly easy to work, though he will certainly require a little practice to be able to get with any degree of certainty just the colour which he requires. The working of the paper is quite simple, and if the chloroplatinate bath be used the colours attained are satisfactory. It must, however, be remembered that it has a great tendency to flatten the resulting prints, taking much of the vigour out of them. Knowing this the negatives which it is known will be required to be printed by this method should be made as vigorous as may be, so as to counteract this tendency, although of course if the worker wishes to get a flattened effect he has only to keep the negatives as usual.

This principle of making the negatives to suit our

paper, and its converse, making our paper to suit our negatives, is a very valuable one, which will often stand us in good stead in picture making.

We append to this chapter a cutting from one of Ned Cuttle's notes in the "A.P.," as being extremely useful and a guide to the beginner in knowing what paper to choose to suit the printing quality of his negative :—

"The majority of amateurs drop into the habit of using only one printing process for all their negatives, be they vigorous and strong in contrast, or thin, flat, and weak, with results very greatly varying in success. By adapting the printing process to suit the character of the negative, good results may be obtained by a suitable process from a negative, which are practically impossible with certain other processes.

"Supposing we had a series of negatives, commencing with the thinnest, flattest image, and gradually increasing in contrast and vigour up to strong blacks and clear glass. We may arrange our printing process in a corresponding order, somewhat thus :

English collodio-chloride ...	The thinnest negative.
Foreign „ „ ...	Slightly less thin.
Strong P.O.P. and gelatino-chloride papers generally	Thin, but full of detail.
Platinotype cold CC ...	Soft, delicate negative, tending to thinness.
Bromide contact (gaslight printing)	A moderately thin negative with detail, but some range of contrast.

Platinotype, cold, A A ...	A medium soft negative.
,, sepia, or black and white hot bath ...	A medium negative, neither flat nor hard, preferably tending to vigour.
Bromide, daylight contact	A fairly strong negative.
Carbon contact printing ...	About the same, but not very dense in any part.
Albumenised silver paper...	A fairly plucky negative but not yellow stained.
Silver paper sensitised on weak bath	From medium to hard and strong.

CHAPTER VI.

THE QUESTION OF SURFACE.

It is a question which will certainly meet the beginner very soon after he has commenced photography, very likely within the first week of his experience, and as soon as he is able to expose and develop a plate with any reasonable measure of success, "What paper shall I use?"

The question is generally settled for him in the case of his first few purchases, by the shopkeeper into whose hands he happens to have committed himself.

The taste and business arrangement of his dealer will probably determine what paper he uses; he has no knowledge, the very names of the different processes are worse than Hebrew to him, and he must take another's word implicitly about the matter.

Here again we ask to be allowed to join the beginner and act as mentor-friend, pointing out to him quite simply what sorts of papers are to be had, their difficulty or simplicity in working, and some reasons for and against their use, according to circumstances and the aims and objects which the beginner has in his mind.

Certain firms give larger discounts and press their trade more keenly than others, and so it is not unnatural, and it certainly *is* business, that if their articles are not inferior they should be recommended (by those whose interests they serve as well as their own) before those of the less enterprising firms.

It goes without saying that most local dealers, however successful they may be as pure photographers or as business men, have had little opportunity of art training, so that we are by no means surprised that their recommendations in the matter of a printing surface are more regulated by business exigencies than by art principles.

Hence the constant recommendation of the enamelled surfaced gelatino-chloride paper as the *summum bonum* of a printing medium for a beginner.

Yes, we fancy that an examination into the different printing papers used by photographers within the first years of their novitiate, unless they happen to live near some skilful and artistic worker, would show that the vast majority begin with, and continue for some time to use, a shiny-surfaced gelatino-chloride printing-out paper.

There are many different kinds in the market, all more or less uniformly good, easy to manipulate, and capable of doing the most possible for a so-so negative.

We are sure that if the object of the worker be to make good prints for reproduction or ordinary commercial purposes, he could hardly do better than use these papers, and the present writer would be at a loss indeed were he debarred from using our old friends, solio or P.O.P., when so many prints have to be prepared for reproduction every month.

Again, when architectural subjects find favour, and as a consequence plenty of detail well brought out is required, the same papers are to the fore, and are just the thing required to give the most that the negative is capable of.

But we will suppose that the worker's aim is distinctly pictorial, and we may doubtless take it as a safe conjecture that three-fourths of those who now take up photography,

set forth with that aim in view, and desire to express such artistic feeling as in them lies through *that* medium.

It will be plain, to commence with, that a mirror-like surface which reflects light in white patches, and even, in extreme cases, reflects *objects* on its glassy surface, must attract too much attention to itself, and so draw the eye away from such pictorial qualities which the print may possess.

Our temptation is to admire the fine gloss, the perfection of result, the pure detail, which such a surface gives, and neglect the pictorial in the technical qualities of the subject.

But it may be urged, "We have heard great things of the results of squeegeeing such papers to ground glass, and we learn that so all detail can be preserved and the glossy surface done away with."

Well and good, but has not the surface still a power of asserting itself? It has a wiped-over appearance which we cannot help noticing, as if it had received the application of a wet cloth across its once brilliant surface; and again, those bright, scintillating spots which are so hard to get rid of, at any rate for the tyro, and which shine and glitter as the print is moved in the hand, are very irritating.

The very detail-giving power of gelatino-chloride papers, an excellence for some purposes, is one of its chief hindrances for pictorial work when we are trying to do all we can to subdue a large amount of the detail in our subject, and give breadth of effect and massing of light and shade.

We do then think that the beginner whose sole aim is pictorial must recognise that we do not require a paper with a shiny surface, nor one with great power of contrast, nor that requires dealing with by optical contact with

ground glass or celluloid to give it a matte appearance ; but that a detail-subduing paper, of somewhat rough texture, will be the most likely one to give him the effect which he requires.

The amount of texture allowable in the surface must be regulated by the size of the print which is in hand; it is almost as offensive to find excessive roughness in a small print as it is to find extreme gloss and superabundance of detail in a large one.

Hence, when, after working a small size, the beginner takes to a large one, he finds that much less small detail and far more masses of bold size will be required, and he is quite at sea with a large instrument until he gets accustomed to this peculiarity.

It may be taken for granted that for prints over whole-plate a good deal of texture may be allowed, while for that size and under much roughness cannot be tolerated, except for some special reason.

It will not be within our scope here to speak of the working methods of the different rough-surfaced papers which are in the market.

No doubt each maker has carefully studied his own manufacture, and knows best its peculiarities, and has been careful to ascertain before sending it out for sale just what combination of chemicals will best suit it, and we are safe to accurately follow out the instructions accompanying each kind.

Our work is easy, as it only devolves upon us to emphasise the more important requisites in the paper to be selected, and leave the beginner to find out by practice which is best suited to his particular size of picture and kind of work.

Our first requisite should be a printing-out image, but

upon this we can hardly insist when such excellent paper as C.C. platinotype is readily obtainable and easily worked. Still, the ideal paper should be a printing-out one, which enables the worker to see what he is doing and control his results at every step.

The second point which we have to ask for in our beginner's paper is that it be coated with an emulsion which will not give violent contrast, but rather tend to flatten the image and reduce detail in most cases, and giving a surface of sufficient roughness to assist the work of breaking up detail and the massing of light and shade.

We should like in conclusion to mention to the beginner one way in which he can hold all these powers in the hollow of his hand, and modify them according to his negatives and the demands of individual cases. We refer to the sensitising at home by the worker himself.

It will not be advisable, perhaps, for the beginner during the first few months of work to attempt this, not because the processes are not extremely simple and almost capable of being carried out by a child, but because he has so many things to learn at the same time, and is apt to do all indifferently if he undertakes too many concurrently, and there is so much that must be undertaken at once, and sensitising one's own paper is not necessarily one of these. But see the immense power which the process gives the worker.

On the point of surface he knows beforehand what negatives he is going to print from, and can choose a paper of any degree of roughness to suit the size of his negative and the nature of his subject, from Saxe to Whatman's rough.

Then again, as to brilliancy or otherwise, he can regulate the amount of silver he puts in his bath, and make one

sheet print with great brilliancy, while another may be of a distinctly different character.

In this way and many others he can ring the changes at his discretion and suit his paper to his needs.

CHAPTER VII.

IMPROVING THE PRINTING QUALITIES OF THE NEGATIVE.

It may be taken as fairly certain that the majority of our negatives will require some amount of doctoring not only to make them print fairly accurately, but also to improve them from the artistic standpoint. It may be possible even to take out altogether some objectionable feature which could not be excluded from the landscape when the view was secured.

It will be well to mention spotting first, as that operation will surely be required on all negatives; it includes the removal of all transparent spots which would appear as dark marks in the finished print. Use a little crimson lake on a palette mixed with some gum water, and with the point of a fine brush apply it just on the exact spot to be covered. A little practice is required as it is not always easy to prevent the colour from running along the edges of the spot instead of on the transparent point, and so making matters worse than before. Should the spot to be covered be more than a mere pin-point, it will be well to cover it by a series of small stipples, and not by trying to paint over the place by one dab of the brush.

Let us now suppose that we have a landscape effect which requires to print lighter in some portion, say where the sun, shining through a break in the cloud, falls upon the middle distance, lighting up a portion of a pool. Let us remember that in order to get our effect sufficiently

dramatic it may be necessary to exaggerate somewhat the salient point.

We take our negative, and after cleaning well the glass side, which may be well done with a little Monkey-Brand Soap, we hold our bottle of matte-varnish and pour a little on the spot which we desire to have printed lighter, allow to dry, and when dry with a sharp knife (in the trade you can procure a very convenient little instrument made on purpose) scrape away the varnish from all parts except just the one where you wish to lighten it.

If on taking a print you find that the spot is not even now sufficiently strong in light you can scrape off all the matte-varnish, add a little colour to that in your bottle, and repeat the operation; or simpler still leave on your first coat of varnish, and with a little sap-green oil colour make a sort of stipple with the end of the finger on the matte-surface, allowing the colouring to come a little over the varnish to prevent a sharp edge. In this way wonderful improvements can be made in the printing qualities of our negatives.

If, on the other hand, it be found that some portion of your negative be too dense, and in the print consequently you have a patch too white which does not print its detail through, you will proceed as before to clean the glass side of your negative and apply the matt-varnish all over it. Now it will be necessary to scrape away all the matt-varnish from the portion in which you require to get more detail. Say, for example, that your picture represents two figures, one sitting the other standing, and the standing one, with a white apron on, offering the daily paper to her companion, and you find that in exposure you have allowed the white apron to get so dense that it prints as a white mass and shows no sign of folds or creases at all, while the

newspaper is also a blank mass of white paper. If you place matt-varnish all over the glass side of the plate, and scrape it away from the parts which are too dense, they will print through, or if they do not it may be necessary to treat the matt-varnish either to the stipple of green paint as before directed, or to a second coat over the first, again scraping it off the parts requiring to print through more.

There is another plan which avails in many cases and so we mention it. Take some tissue paper, or papier mineral, cut out a piece the exact size of your plate and put it into a dish of water to soak. Now taking your plate gum along the rebate edge on the glass side and stand up till dry. Taking the wet paper from the dish by one end allow the water to drain off for a second or two, and then place on the glass side of negative, place a piece of blotting-paper over it, and smoothe down with the hand, and when the paper adheres quite smoothly to the glass surface stand it up to dry. When dry take the above-mentioned knife and scrape away the paper where not required, and the operation is complete. This is very useful where skies print dirty, or without proper cloud forms, and you require to keep the paper fairly white with a view to the after insertion of clouds.

Two very simple plans may be suggested in cases where there are no important objects protruding into the sky of our picture.

One plan is, when you have the paper on frame, and are just beginning to print, to lay the focussing cloth on the glass side so as to nearly cover the sky portion of the picture, then double the edge up which approaches the sky line so as to graduate the light just at that point, or the same effect may be obtained by a piece of tin fastened

with drawing-pins to the sky end of your frame and gradually curled upwards till it stands away from the glass about an inch or two just where sky and landscape meet. These simple improvised sky-shields will be found very effective, and though the sky will be tinted a little near sky line, it will be so slight and so graduated off into entirely white paper, that there will be no interference practically with the printing in subsequently of even the most delicate clouds.

In some cases, notably in architectural subjects, it may be necessary to take out the sky entirely and make the objects which protrude into it print hard and sharp against the white sky.

In order to do this it will be necessary to get some Bate's Black, and with a fine drawing pen or paint brush follow *most accurately* the line of the sky and the detailed outline of the buildings projecting above it on the *film* side of the negative, holding the plate at an angle and with the sky part downwards, so that if any of the black runs it may run over the sky portion where it will do no harm; when these outlines have been marked round the remainder may be roughly and quickly filled in with Bate's Black applied with a much larger-sized brush.

But there are still two powers in the hands of the worker in relation to the negative and its printing capacity which we have not described, we refer to what is called reduction and intensification.

It will often happen that we have in development misjudged the density of our negative, and so when it has been fixed we see at once that it will be too thin even for the printing processes which demand thin negatives, so we proceed to intensify.

The formula is as follows:—

(A) (1) Add half-ounce of powdered bichloride of mercury to
(2) quarter-ounce of hydrochloric acid and then add these two to
(3) 40 ounces of water.

This stock solution will keep wonderfully, and can be used again and again.

(B) A ten per cent. solution of Liquor Ammonia ·880, viz., one ounce of Liquor Ammonia in 9 ounces of water.

Soak the plate in A until it is pure white all through, and has an appearance of opal glass. Wash with several changes in pure water, and then immerse in the ammonia solution until sufficiently blackened.

A rinse under the tap will complete the process.

But if instead of being too thin we find the opposite to be the case, and our negative is too dense to print properly without undue exposure we proceed to reduce.

This may be done, and is best done before washing and after fixing, while the hypo is still on the film; if the negative has been washed and dried it will be well to immerse it for a time in a freshly-made fixing-bath. Solutions required :—

(A) A bottle of hyposulphite of soda solution (4 oz. to pint).

(B) Ten per cent. solution of Red Prussiate of Potash (say 4 ozs.) just sufficient of A to well cover the plate, and add quarter of ounce of B, but be careful, as B is very strong and reduction proceeds rapidly: when the plate is sufficiently reduced it must be thoroughly washed.

But suppose it be necessary to reduce only a portion of the negative and not the whole. Then rub the portion of

the plate which it is required to reduce with pure alcohol applied with the point of the finger covered with wash-leather. It seems a dangerous proceeding at first, but experience will show that a good deal of hard rubbing may be resorted to with impunity.

Another plan is to apply the reducing solution above given with a camel hair brush to the part which it is desired to reduce, constantly dipping the plate into the hyposulphite solution to prevent the reducing agent running over parts which we do not require reduced. This is a dangerous process in the case of a valuable negative, and we should advise practice on a negative on which we set no value before trying it on those which we are anxious to preserve.

CHAPTER VIII.

BROMIDE PRINTING AND ENLARGING.

The question of how to enlarge our pictures, if, as is most probable, we have begun our work with one of the smaller-sized cameras, is sure soon to be a pressing one; so it will be well for us to have a chapter on the subject, and to try and set the beginner on the right lines. The method of enlarging by daylight is considered by many to be so superior in its results that we will only consider that. We shall require a window if possible facing the north, so that the light may be as constant as possible, and a framework made so as to bolt on to the window-frame to exclude light, and yet, if the room be required for other purposes, able to be taken down when done with. In one corner of this framework we shall require the non-actinic material to be removed, and an aperture made capable of just retaining the sized negative which we are in the habit of using. The negative can be secured in its place either by dropping into grooves fixed in the aperture, or by being fastened in by small bolts just covering the rebate edge. We shall require some sort of support inside the window on which to place the camera; this can be either a small table, just bringing the ground glass of the camera opposite the hole in our screen. We shall require as well a flat smooth board to be fastened to some sort of support, so that it will stand upright and firm, after the manner

of a picture frame. We now arrange the camera, turning the ground glass over, and pushing it close up against the negative in the slot, and we place the smooth board on a table opposite, taking care that all the different parts of this improvised apparatus are parallel to one another—the negative, the camera, and the board must be absolutely parallel with each other.

All light being now excluded from the room except that which comes through the negative and camera and lens, we move the board backwards or forwards until we get an image enlarged as we require and fairly sharp, and finish the sharpening up with the rack of the camera. We take out a piece of bromide paper, fix with pins to the board, give our exposure, roll up our paper, place it in a large box or other receptacle, take it to dark-room, and develop and fix.

If the enlargement is to be to many diameters, it will be necessary that the original negative should possess a large degree of sharpness, and those which enlarge best are the ones which are free from fog and other defects, and have the clear glass shadows some people praise so highly.

Exposure will be a factor requiring a good deal of consideration in daylight enlarging: much more so than in enlarging by artificial light, as there are so many varying conditions—the variable actinic value of the light being the chief difficulty. The stereotyped plan of exposing little slips for different lengths of time and developing them to gain experience, is as good as any.

But it will probably happen that you will by no means be content with seeing your enlargements always in the bromide cold tone, and with the faults inherent to the bromide method, and will prefer to make enlarged nega-

tives so as to be in a position to print by any process you may desire. One of our best workers has sent me the following valuable hints on his method of making and printing from, enlarged negatives. When he has obtained a negative of a subject which he thinks satisfactory, or, perhaps more accurately, less unsatisfactory than usual, he takes a proof, which he looks upon as a rough sketch to study, and to be the foundation for working up a picture. It is then he decides if certain masses should be lighter or darker than the negative can give them, if certain objectionable objects should be removed, or if detail is too prominent. Matt varnish will work wonders when used with judgment on the back of a negative if certain parts are to be lighter, and it is often easy to altogether remove objects by working on the negative and again on the transparency which has to be made after the negative is prepared.

He always makes a transparency by contact printing, and it is quite easy by masking different parts of the negative to get a very different result from the first proof taken on paper. The transparency can also be matt varnished on the back, and any parts strengthened that may require it. Printing in clouds wants a little practice, but it is not more difficult than in any other process which does not print out. From the transparency he makes an enlarged negative, which is also open to treatment.

The enlargement of the negative will be made in the same way as a paper enlargement, only some grooves will be required, or strong drawing-pins, to fix the plate to the board with before the exposure takes place.

As it would be a difficult business to fix the paper or plate, so that the enlarged image should fall exactly on it, in the dark; it is usual to use a cap with red or yellow

glass instead of leather in front of the lens; this allows a certain quantity of safe light to be thrown on the board, enough, at any rate, to see to fix the paper or plate by, and no fogging of the plate or paper results if care be used.

Let us now speak of what is known as contact printing before we proceed to deal with the development of the bromide papers.

Let it be observed that bromide papers, though far more sensitive than ordinary silver or platinotype paper, is not nearly so sensitive as a photographic plate, and so one yellow glass of the dark-room lamp will be a sufficient and safe cover for the white light.

We place the negative in the printing-frame with film side up, take a piece of bromide paper out of the packet and put it face downwards on the negative, on the paper again a felt or india-rubber pad, and fasten up the printing-frame.

A question may be asked, "How shall we know which is the face of the bromide paper?" There are two ways of telling this: in the first place the face generally curls inwards when the air gets to it, and the second is that if the finger be moistened in the mouth and applied to the extreme corner of the paper the face will be sticky and adhesive.

We now turn up the gas or a strong burning lamp, and holding the frame perfectly parallel to the light and about two feet away, proceed to give the exposure, the duration of which will vary according as we use rapid or slow bromide paper, the density of the negative, and the strength of the light. It will be well, after finding the correct exposure of one negative, to mark with a sharp knife on the rebate edge the seconds it requires for

correct exposure, and then when we have printed from a dozen negatives or so we shall, by a comparison of their exposure, learn to judge pretty accurately what will be required in any given case.

Now a word as to the developer for bromide papers. We are of opinion that there is, after all, nothing better than the old ferrous oxalate developer, so we will proceed to describe the composition and use of that.

Take two Winchester quarts and label A Oxalate, B Iron.

A will be mixed as follows:—

Neutral oxalate of potash	8 oz.
Ammonium bromide	10 grains.
Water	32 oz.

B:—

Ferrous Sulphate	8 oz.
Sulphuric acid	32 minims.
Water	24 oz.

For use add one part of solution B to six parts of solution A. If A be added to B the solution will not be fit for use.

Taking the piece of bromide paper from the frame, place face upwards in the dish, and pour on clear water and allow paper to soak for a few moments while the developer is being prepared, as it is repellent of damp. Now pour off the water and apply the developer, proceeding as in the case of negative development till the image is out as desired, when *immediately* place print face downwards in a dish containing dilute acetic acid (1 dram in 32 oz.), and after a small interval pour away and give another bath of same. After washing in water three or four changes, fix in hyposulphite of soda solution (2 oz. in 10 oz. of water) for some fifteen minutes. After wash-

ing very carefully in many changes of water for an hour, hang up to dry, either by clipping the two top corners to a line, or placing the paper face upwards on *perfectly clean* blotting-paper.

CHAPTER IX.

LANTERN SLIDE MAKING.

When the beginner has sufficiently mastered the difficult work of developing and printing with some success, he will be sure to wish to turn his attention to other branches of photography, and especially so if either the winter season be approaching, or he be desirous of lecturing on his tours and outings, and will be anxious to be able to make his own lantern slides.

And let it be said at the outset that there is no reason why he should not attempt this work even while he is yet a beginner. The plates for lantern work have been brought to such a pitch of perfection now-a-days, and the apparatus necessary can be secured for so small a cost, that no one need, with a little practice and care, fail to make lantern slides sufficiently good for any ordinary purpose.

The size of his camera will in all probability determine by which of the methods his slides shall be made.

The size of a lantern slide in England, as all the world knows, is $3\frac{1}{4}$ by $3\frac{1}{4}$ inches, so that if his camera is a quarter-plate one it is highly probable that he will make his lantern slides by what is known as application, while if his camera be larger than quarter-plate, except in a few instances, he will probably work the reduction method.

In order that the reader may be able to attempt this work, it is necessary then that we explain the two methods

as clearly as may be; but let it first be noted that it will be very unwise for the amateur to attempt in these days to make his own lantern plates, for though there is no great difficulty in the process, it will be unwise for the beginner to handicap himself so when most excellent plates can be got commercially at the almost nominal figure of a penny a-piece; moreover the working of a gelatine lantern plate does not differ very much from the working of the ordinary plates for field work with which he is acquainted, and this offers an additional advantage at a time when there is so much for the beginner to learn. The plates of commercial make are also much more rapid than the collodion ones which would be made at home, and so another advantage is scored. Still, with all these points in their favour, many are still of opinion that the very best lantern slides can only be obtained by the collodion method, and advise against gelatine lantern plates.

Let us first of all proceed to explain the *modus operandi* in the case of lantern slides made by application.

It will be necessary to place the selected negative in a frame, as if we were going to make a print. Dust it, and place it on our dark-room shelf, near to the box of lantern plates which we are about to use. Turn down the light, and by the light of the dark-room lantern only proceed to break open the box of lantern plates; select one, dust it, and place it film to film with the negative.

Now taking the frame and the negative and the plate in hand, hold them up to the lamp so that its light shows through them, and then move the plate carefully till the exact portion which is required upon the lantern slide be covered by the lantern plate, taking care that any vertical lines in the picture are parallel with the sides of the lantern plate, or failing any such lines that the horizon

and the sides of the lantern plate are at right angles to one another.

Having arranged our plate to our satisfaction, we put on the back of the printing-frame and fasten it up.

We are now about to expose, and the question of time comes in. This can only be learned by experience, and a few trial exposures are recommended on a typical negative, and when that point is settled other exposures can be calculated.

Of course much depends on the density of the negative, the quality of the light, and the brand of plates.

As a rule we prefer the light of a strong lamp or a gas jet to daylight for this kind of work.

The dark slide is held perfectly upright at the distance of about a foot from the source of light, which is turned up for the purpose and then turned down again.

We now proceed to take out our lantern plate and develop it, but before we describe operations any further it will be well to explain the other method of exposure known as reduction.

When our negative is much larger than our lantern slide it is manifest that we must either be content to take a portion of it only for our picture (which will not often be the case), or we must reduce our picture to the lantern slide size.

There is an instrument to be obtained for a few shillings, which we should recommend the beginner to use for this purpose, which very much simplifies matters: it is called a reducing camera, and consists of a long black box with a lens placed centrally, and a place at one end for the negative to be reduced, and at the other for the reception of the lantern plate upon which the reduction is to be

made. Such a machine will cost less than £1, and will save a large amount of trouble.

Having examined our reducing camera and mastered its way of working, we go into the dark-room, and placing our negative in position, and the box of lantern plates ready to hand, we turn down the light and put a lantern plate into the place prepared for it, and put on the covers. Taking the camera in our hands, with the focussing cloth cast over the end containing the negative, we go out to a place where we can get an uninterrupted view of the sky, and removing the cloth allow the light to pass through the negative for a second or two, as the case may be, taking care to hold the machine quite steady during exposure, replace the cloth and return to dark-room, where we remove the exposed plate for development.

Let it be said at once that slides made by reduction are of finer quality and gradation, though it might not have been expected that such would be the case, than those made by application, and the work is really just as easy.

These reducing cameras are so cheap that many persons regard them as mere toys; but this is not the case, they are most useful and work well, saving a large amount of trouble.

Now a word or two as to development. As has been said, it does not differ very materially from the process of developing an ordinary plate. In the one case we develop a positive, in the other a negative.

It will be better to make up exactly the formula given on the box for the particular plates we use; plate makers should be the best judges of what suits their own brand most accurately, though it will be perfectly possible, if necessity compel, to use ordinary pyro, soda, or other developer.

The question of density will be an important one, and in fixing on a certain standard we must be guided by whether the slide is to be used for limelight or ordinary oil, for of course much greater density will give a good picture with limelight when oil would fail to penetrate sufficiently to give a good clear image on the screen.

Lantern plates should be washed very carefully to avoid scratches, and on taking them out of the wash it is desirable to very carefully go over them with wet cotton wool to see that no particles of dust, hairs, or any other substances are adhering to them. They are then placed in position where dust cannot get at them and allowed to dry.

In examining our slides to see if they are satisfactory as to density, it will not do to hold them up to the light, but a piece of white paper should be held in the hand and the light reflected through the slide held at right angles to it: this will give the nearest approach to the kind of appearance that it will have on the screen, though as a rule it is never safe to pass a slide as satisfactory unless we have tried it through the lantern.

A few words as to how to finish off our slides will be useful and necessary. We shall require cover-glasses, binding-strips, and lantern-masks to complete the work: all these are obtained at small cost from any dealer.

Selecting a cover-glass without any flaw we very carefully clean it and polish it over before use. Laying our lantern binding-strips ready we place the cover-glass against the film side of our slide and press the two, which will be exactly the same size, together, having previously selected a mask of the shape we think most suitable for our picture, and placed it on the film side of our lantern slide. Holding the slide-mask and cover care-

fully in our left hand, we proceed to take some of the lantern binding-strips, previously moistened with saliva or a damp sponge, and cut to lengths of $3\frac{1}{4}$ in., and placed with the sticky side upwards on our table, and press one side of the lantern-slide and cover-glass firmly upon the strip, this will at once stick, and we then smoothe down the edge of the binding-strip equally on either side, and after giving it a moment or two to dry in position, we fix the other sides by the binding strips in like manner.

Our slide is now complete, and can be stored away for future use in one of the many boxes sold for the purpose and fitted with grooves to receive and hold the slides.

CHAPTER X.

HAND CAMERA WORK.

We do not propose in this chapter to enter upon the vexed question of hand or stand cameras, or to explain the construction of any of the thousand kinds of hand cameras with which the market is stocked, but only to give a few hints in case our beginner should be the possessor of a hand and not a stand camera, as we have hitherto been supposing.

Many people who begin photography purchase a hand rather than a stand camera, all unknowing that they are really undertaking the hardest kind of work at the outset, and that work of the dark-room and printing require more skill and care, generally speaking, in the former than in the latter case. Plates which have had far less exposure as a rule than they ought to have done, or very rapid plates, or snapshots with dark patches of shadow, are harder to develop properly than stand camera plates which have had ample exposure to begin with.

And again from the chalky negatives which are often the result of hand camera exposures, it is harder to do the necessary masking and shielding to get a good print than from the properly graded negative produced in the stand camera.

Of course we are not here judging the merits of the two systems, but merely warning the beginner that for him to commence photography with a hand camera is not the

easier path or the one more likely to lead to further technical excellence in results.

Hand cameras are more or less intricate in manufacture, and so the first thing that the beginner will have to make sure of is that he thoroughly understands the working of his machine: he must know exactly the use of the different screws and knobs, etc., and if he cannot find out by himself or has no book descriptive of the instrument to guide him, he must ask some more knowing friend, or the dealer who sold it to him, and get to know its working parts thoroughly. Many we know, who are working with hand cameras, are quite ignorant of the use of some parts of the instrument.

There must be a thorough rehearsal of all the movements entailed in an exposure, with the camera uncharged with plates, so that the movements are sufficiently well known to be carried out, almost automatically, when the time for actual exposure in the field comes.

The camera should be opened in daylight before plates are inserted, and every portion seen, and the order of proceeding rehearsed until the whole working is quite familiar, and there is little chance of making an error in detail when the critical time of exposure comes. The hand-camera man must not think that he is going to have an easy time, for in many respects, if he is in earnest, he will find that the hand is far more troublesome, especially in its after work, than a stand camera.

Now the first question, and a very vexed one it is, is as to how to hold the hand camera; on the hip, under the arm, on a level with the head, have all found able advocates, and so when such authorities differ it is well to take a middle course, and we should suggest that it be held so that the finder can be comfortably inspected; the strap passing over

the shoulder is a wonderful help in steadying the camera, and leaves the hands freer for the work of manipulation.

The subjects which are open to the hand camera worker are simply legion, and he can of course work at times and in places quite impossible with the ordinary stand camera.

Is he strolling through the streets of a strange town and interested in its particular life and industry? Is the subject which he is studying the moral condition of the neighbourhood? the habitués of the corner public are soon transferred to his plate; or, again, is he an artist? he can use his little handy friend instead of a sketch-book, and record many a pose and gesture which would otherwise have entirely escaped him. There is enough work in the streets to last an earnest man years, and to add to his interest in the knowledge of human life and work considerably.

Then, again, how pleasant to bring home holiday records, which, though small, are much more numerous, and often personally much more full of life and interest than the more studied effects by the larger instrument. And then the weight—he who has lugged a 10 by 8 even, to say nothing of a 15 by 12, for several miles on a blazing day in June, and perhaps put it together, taken it to pieces and packed it up half a dozen times without exposing a single plate or being a bit "forwarder," will be best able to appreciate, from the one point of view, at any rate, the joys of a handy little instrument which is a feather-weight in comparison, and simply wants strapping, after use, across the back where its weight is hardly appreciable.

What capital studies of horses, cattle, sheep, animals in the farm-yard or the menagerie are herewith obtainable which it would baffle the cleverest worker in the larger sizes to obtain.

And if it should be said, "Yes, this is all very well, but then your results are so small as hardly to be worth the name of pictures at all," we reply in the words which have been done to death, but are nevertheless quite true, "A picture does not depend on its size for excellence." But setting that aside there is the possibility of enlarging our small negatives, be they clear and the subject admit of it, to any size which we may wish, and having our large picture after all: but even if we have six out of twelve which are but little good, it will not be appreciable in cost to have to throw away the sixpennyworth of plates, or be so costly a matter as the loss of *one* 15 by 12 at 32*s.* a dozen.

It is necessary to say a few words on the after treatment of hand camera plates.

The exposing is easy, but the developing not so, for we suppose that 75 per cent. of the hand camera plates have been under-exposed, and will require treating accordingly in the developer.

We are still persuaded that there is no agent so good for all round work as our old friend pyro, either with ammonia or soda, but let the plate be first soaked in the alkali, whichever it is, before it be poured into the cup, and the whole mixture applied to the plate; and we should like to say that if the brand of plates are known to be well-suited to ammonia development, we prefer the ammonia to the soda for hand cameras, as in our hands, at least, it gives more flexibility and more power in varying results. It will not be necessary to insert formulæ, as they have already been given in the chapter on development, and there is no secret and universal mixture which we can divulge which will turn out technically good negatives in an unvarying fashion, and, as the wit had it, the developer must always be well mixed with brains.

There is a temptation in doing small work into which we have often fallen, and shall fall again, no doubt, but still we must take up our parable against it if the worker desires the best results, and that is, the habit of using a big dish and developing a whole batch of hand camera plates at once. It sounds very plausible to say, "Well! they have all had the same exposure (if such be the case), they are from the same batch of plates, and I shall use the same developer equally on all." True, but then how about another factor, the character of the subject? You are trying to develop at the same time, we will say, an open scene of sea and sky, and a group of people blackberrying by the side of darkish wood; these will require very different treatment if they are both to turn out successful as negatives, and to work on twelve different subjects at once with same developer, adding ammonia at the same time for all, must be the way to court failure with some, at any rate, of the batch.

If this method has to be resorted to on account of time, then let two other dishes be prepared with variations in the developer; and then the negatives which give signs of being wrongly treated, either by being too fast or too slow in appearance, or in any other way misbehaving, can be put into the dish which contains the mixture most suited to their complaint.

We wish the hand camera man all success; he has an easy and delightful method of carrying on the practice of photography, and if he is in earnest, and not merely using the camera as a plaything, but studying as he would in the larger sizes to get merit into his pictures, he will have a good chance of exemplifying the art of photography as well as its practice.

CHAPTER XI.

INTERIOR WORK.

We wonder why it is that interiors of rooms, churches, etc., seem to exercise such a strange fascination over beginners, so that as soon as they find themselves able to decently develop a plate they "go" for these subjects. It may be described as the second "furore" which seizes the tyro; the first is the indescribable fascination which the loved physiognomies of "his sisters, his cousins and his aunts" seem to have for him: he takes anyone who will agree to stand before his lens, and recklessly throws away loves and friendships at the rate of several per diem.

However, as there are some special points to be remembered in taking, developing, and printing interiors, and there is a good deal of this kind of work done by beginners, it will be well to devote a short chapter to the subject. There are special difficulties, and therefore special hints will be required.

The first things to notice, when some room or church is to be taken, are the sources of light and the amount of it available, the size and position of the windows and available doors, and which ones will have to come into the selected portion, and whether the others will come behind or on one side of the camera, so as to illuminate pleasantly the chosen subject.

The selection of a portion of an interior, has thus, to a certain extent, to be guided by the amount and direction

of the light, but there will be plenty of scope for the use of that artistic feeling which is generally most manifested in landscape work; the arrangement of lines, masses of light and shade, objects prominent or subordinate may be so arranged as to give an artistic and pleasing effect, and perhaps even greater care and skill will be required here for the beginner than in the open work in the field.

Our selection made, the first thing will be to get it on to our ground-glass screen as nearly as may be. On getting the camera pointed and arranged, we may find that we do not nearly include with a RR lens the portion we had wished, and so the WA lens has to be substituted. Then we find too much roof or an unnecessary stretch of foreground, and the rising front has to be lowered or raised to meet the case. Again one side seems sharp, but where the corner of the wall protrudes hazy in focus, and the side swing comes into operation; when, however, by the use of the proper lens and the due arrangement of the camera, we get on our screen the portion we desire, the next thing will be to see that the camera is absolutely level. You will no doubt be fitted with a spirit level, or even two, so that the camera may be tested, each time it is moved for focussing, to see that it is absolutely at right angles to the upright walls, pillars, etc., of your interior.

Having got upon the ground-glass the exact picture which you have determined upon, and the camera level, we shall next require to see that it is absolutely in register: for though diffusion of focus may be allowable, and in many cases a great gain to the picturesqueness of a landscape, yet in architecture it is absolutely to be avoided, and extreme sharpness is the rule in almost every case unless, as is very seldom required, we should wish to get "an impression" of a building; but even then suppression of

focus must be only allowed if done with an artistic skill and judgment which demand a master hand.

You will find, however, that the getting of sharpness is no easy matter; parts of the subject will be so dark, probably, that you will not be able to see to focuss accurately. What is to be done? You must call in the aid of a friend with a piece of lighted candle, and get him to hold it close to the important portions of the subject which are too dark to be seen distinctly on the screen; focus to the candle-flame, and in that way you will secure all parts in register. Let a caution here be given. Do not think that because you are fairly sharp with F 16, therefore the introduction of F 32 *must* give *extreme* sharpness; it is a fact of experience that such an insertion will often tend rather to disturb existing focus than to sharpen it, and you should never trust to anything but the evidence of your own eyes examining the ground-glass of the camera, after the introduction of a stop, before you expose.

But supposing that in spite of all we can do to avoid it certain windows are included in our picture which will certainly halate and spoil our plate. What are we to do then?

Let it first be understood that all plates in this kind of work should be backed. This is seldom done, on account, we suppose, of the trouble which it is supposed to involve, but, as a matter of fact, with Wheeler's Non-actinic backing-paper, or some similiar production, the work is easy and expeditious, and there is no mess. But see that the paper is well in contact with the glass *all over*, or you will have all your trouble for nothing, and halation just the same will make its appearance.

But granted that the plates *are* backed, what more can we do?

If there is sufficient light, in the building or room to be taken, *without* the window, which you must include, then let a curtain, sheet, or tarpaulin be fixed up over it outside for the greater part of the exposure, and only let fall for sufficient time, at the end of the exposure, to allow the window to register itself on the plate; but if the light from the window itself *be* required, then the sheet or tarpaulin must be fastened a little way out from the window outside so as to allow the light to enter the window round the covering, but yet to allow no *direct* light to enter.

If the subject be a room it will suffice to draw down the blind and draw the curtain for a great part of the exposure, and then to draw them back for a little towards the end of the time. Dark corners of rooms and churches can sometimes be illuminated by means of a common bedroom mirror, by standing behind the camera and flashing the light into them by its use.

The question of exposure in interior work is a difficult one, but we may make sure that we are far more likely to err on the side of under, than on that of over-exposure. The cases are rare where with dark interiors and small stops, the exposure has been really adequate.

Our best advice will be: turn to the chapter on exposure and apply the rules there given to determine the general question as judged by plate, state of light, time of day, and so on, and then make allowance for the difference between out of doors and in the room; how many times more you must expose for the amount of light cut off by the walls and ceiling less the amount *let in* by the windows, spaces, etc., and in this way you will fairly accurately be able to arrive at a result which a little experience will soon render more correct.

You can, if you feel so disposed, use an exposure-meter, which will give you accurately the proper exposure more or less automatically.

Perhaps one word may be said in conclusion on the subject of the development of interior subjects. As under-exposure will probably be the rule, and over-exposure the exception, we must act accordingly, reducing pyro, and using a weak developer so that all detail may be secured before any part should get beyond due printing density. One of the best interior subjects the writer ever obtained was so developed till detail was beginning to appear, and then the water-jug was emptied into the developing-dish and matters left to adjust themselves while the writer attended to other business.

Let us remember these axioms in interior work: Upright camera, backed plates, long enough exposure, and a weak developer.

PART II.

CHAPTER I.

PHOTOGRAPHY FROM THE ARTISTIC STANDPOINT. "OUR AIM."

It is often somewhat late in the career of the photographer before he begins to enquire what his *motive* is: before he begins to take his place and find his special branch of this wide subject. Let us think, first of all, of some of the different branches which may attract his attention. Let us suppose that he is engaged in journalistic work, and wishes to meet the taste of the present day by presenting illustrations with his letterpress. He may be doing articles of the topographical and literary order, and he will then find his camera a very great help. He will travel down, let us say, to such a place as Bedford, and stay a couple of nights, taking in Bedford itself, the Bunyan monument, the gates of the chapel which is the modern successor of the one in which Bunyan officiated. He will take the pleasant walk to Elstow, observing and photographing Bunyan's cottage, the church tower where he rang the bells, the church itself in which as a youth he worshipped, and the fine old gateway of the ancient manor house of the Hillersdons. Then he can return to Bedford, and on another day go to Olney, full of memories of the poet Cowper, and so little really altered since

his day. There is the "tall tower from which the sound of cheerful bells just undulates upon the listened ear"; there, too, is the bridge "whose wearisome but needful length bestrides the wintry flood." Though we are by no means of opinion that his pictures need lack pictorial qualities, yet his main motive will be, not pictures, but good and clear prints, as reminiscences of the places to illustrate and grace his letterpress. His aim is purely, in the first instance, topographical.

Another worker is keenly interested in all questions of church architecture and church antiquities. Before he goes for a holiday he is most busy in hunting up all the interesting points in the churches of the neighbourhood in which his rest is to be taken, what periods they belong to, what interesting details they possess, what specially interesting features they present, and every available hour will be spent in multiplying negatives which shall aid his architectural studies during the coming winter. His *aim*, of course, is *purely architectural*, though a knowledge of the laws of art, and a feeling for the beautiful, will greatly aid him in his ecclesiological studies with the camera. To another worker the camera presents itself as the aid to scientific study, as an adjunct to the work of the microscope to register and display on a large scale its marvellous revelations. His aim will be photo-micography, and his work of a scientific nature.

So then our first point in speaking a few words on the artistic side of photography is, "What is your aim?" If some one of the above, or any of the many other branches of work attracts you, follow your bent and be a successful worker in that particular way, but if on the other hand you find yourself gradually led deeper and deeper into the study of photography in order

that you may register and preserve the effects in nature which appeal to your artistic temperament, then artistic photography is your aim, and these chapters are for you. We are far from feeling that you will find them in any way sufficient; you will read and read again all sorts of books on the subject, but they may serve as an introduction to the larger works of H. R. Robinson and A. Horsley Hinton, which you must study for yourself. So then we are agreed that your aim is artistic, and that you care nothing for the camera, lens, detail, sharpness, out-of-focus-ness (to coin a word), houses, bridges, churches, ruins, etc., but as the agents or elements of your picture-making, and as contributing in their several degrees to the perfection of your finished picture. We remember one of our leading lights in a lecture saying to us the other day, "What is a picture?" and the answer he gave us was, "A reproduction from an impresssion," and to this everything is to be subservient. We shall be able to tell in a measure if we are succeeding by the kind of remarks which people make about our finished result. If they say "Where is it?" "Who is it?" "Is not that taken so and so?" it is evident that we have made them think more of the person or locality than of the character of the person or the impression of the scene.

It ought to be our aim to reproduce the *gladness* of the summer day: the pensive *sadness* of the dripping autumn afternoon; the *peacefulness* of the day's end, and "the clouds that wrap the setting sun when autumn's softest days are ended;" and to make others appreciate just that aspect of the changing expression of the face of Nature which attracted us at the time. We need not seek any particular locality, but fix upon the few miles of country around our own homes, whether in the crowded city,

where subjects are on all hands, or the pleasant country side, the woodland, or the sea.

This fixing of our aim will be a great help to our work, we shall know what need not any longer trouble us, we shall know what books to buy, we shall always walk about with our faculties on the alert to observe and to record, and it will not be long before we not only have artistic representations of our impressions, but begin to feel that the aim which we have set before ourselves is indeed a worthy one, that it grows with our growth, that it is a constant education to the eye and the mind, and that we shall thank photography not only for drawing us into the sweet scenes of nature, but also helping to educate our tastes, improve our powers of observation, and provide us with a pastime and an education as long as we have health to carry the camera and to rejoice in the impressions which it records.

The first thing then is to settle on our "aim," and having determined it to bend all our studies that way. In photography, as in everything else at the present time, division is the order of the day, and the skill demanded of the worker in any particular branch is too great, and the standard of excellence too high, to admit of his taking up, with any degree of success, other and subsidiary branches of the work.

We do not mean by this that the artistic worker shall never, to take an instance at random, make his own lantern slides; no doubt he may do so, but what we contend is that if he is to be in earnest to excel in the pictorial work he will never be able, as a rule, to do the same in the region of lantern-slide making, though he may do it sufficiently well to satisfy the modest requirements of himself and his friends. After all it is an age of

specialism in photography as in everything else, and if we are to succeed in any degree where competition runs so high, it will only be by excelling in one particular line, and having one consistent aim in our work.

CHAPTER II.

SOME LEADING PRINCIPLES.

Let us now suppose that the beginner has read the first chapters of this book, that he can expose with tolerable accuracy, can develop his plate so as to make a passable negative, and has one printing process at least under some measure of control. He is starting out to try and produce something better than the view in the back garden, or the misrepresentations of "his sisters, his cousins, and his aunts," which have hitherto been the highest flights of his artistic genius.

Let him remember first of all that he is not going to photograph a view but to record an impression. He knows where there is a ruined castle, but he does not go there; he remembers a picturesque cottage, but that does not tempt him: he deliberately leaves his camera at home, takes his little square frame, the sides of which are in the same proportions as the sides of his plate, puts his note-book (where is the serious artist without his note-book?) in his pocket, and sallies forth for a walk. He makes his way, we will say, to some piece of open common land in his vicinity, where gorse and heather abound, and where deeply rutted paths lead from one part to the other; or where some pool, its bank fringed with reeds and its surface marked with the ripples of wind, takes his fancy. He walks about considering, and waits, perhaps, for something to strike him hard. By-and-by

A Grey Day by the River. *A. H. Blake.*

something attracts him, and he begins to ask himself why. Is it that pleasant line of rutted road leading to that clump of trees towards which also the hill on the distant horizon seems to slope? Is it that pleasant curve of bank leading the eye in to that tree where the distant line of water also seems to terminate? He is learning the principle of the use of lines either made by objects themselves or by the juxtaposition of light and shade to lead in the eye pleasantly from the foreground to the point of interest, and so away out of the picture into the dim distance.

Again in these instances he is learning another principle, that there must be something *to lead to*. Here it is that so many pictures fail. Very pretty, we say; that piece of road is charming, that rock with its "'broidered" lichen is very sweet, that cottage lies well by the side of the wood, *but* what does it mean? what is the motive? what does he want us to fix on as the *raison d'être* of his picture? There is no answer, for he meant nothing, had no aim; he thought it looked pretty, and so he "took" it. The artist, however, leads up to something. In our first instance the lines of road lead up to the point where the soft lines of the distant hill seem to join the strong dark of the clump of trees, and just where perhaps "the clouds that wrap the setting sun" most took the attention; in the second case the strong horizontal line of water and adjacent tree to which the curved line of bank led, were pleasant objects and satisfying to the eye.

But there is something more than this merely pleasant impression at which we can aim, viz., the catching, if we may so express it, of some of the expression of the face of nature: something of her sunny gladness, something of

her poetry at the dying of the day, something of her soft and tender far-off-ness.

As we write we look at a print which lies before us; it is a simple thing—an old wreck with broken timbers; on its right and running across the picture a salt pool left by the retiring tide, and in the distance the plunging sea in its sunny happiness, and the distant line of cliff. And is that all? No, indeed, it is full of poetry, of expression. The poetic temperament in us is stirred. Though the wreck has lain there long, and is half-sunk in sand, the sea seems to mourn for its past fury, to be grieved at the disaster which its wrath had wrought: the tender reflections are in the still pool just edged by a ripple, as sorry too for what had been. It is full of the poetry of the sea, and the artist has succeeded in awakening in us the same feeling which filled his own soul when he took the picture.

Or think for a moment of that splendid work by Mr. Moss, which forms one of our illustrations. It is called "Blowing up for rain," and represents a stretch of mud on the banks of a tidal river, heavy clouds are rolling up, while a boat on the stream yonder tacks about and its sails flap in the breeze which accompanies the cloud. And is this all? No, indeed. The dark shadow of the heavy storm cloud creeps to you across the mud, the wind with which the tacking vessel struggles will soon smite you with its cold breath and you are chilled: the sun has withdrawn its smiling, and you feel that the storm from that dark cloud will soon be about you with its cold stinging rain and driving wind; you feel the same sentiment that the artist did when he made the picture; a chill, and a presentiment of coming storm.

So we learn from illustrations like these that if we wish

to get pictures we must study the impression which a view makes on us; get at its feeling and expression, and try to reproduce that and not the mere detail which may be present to our view.

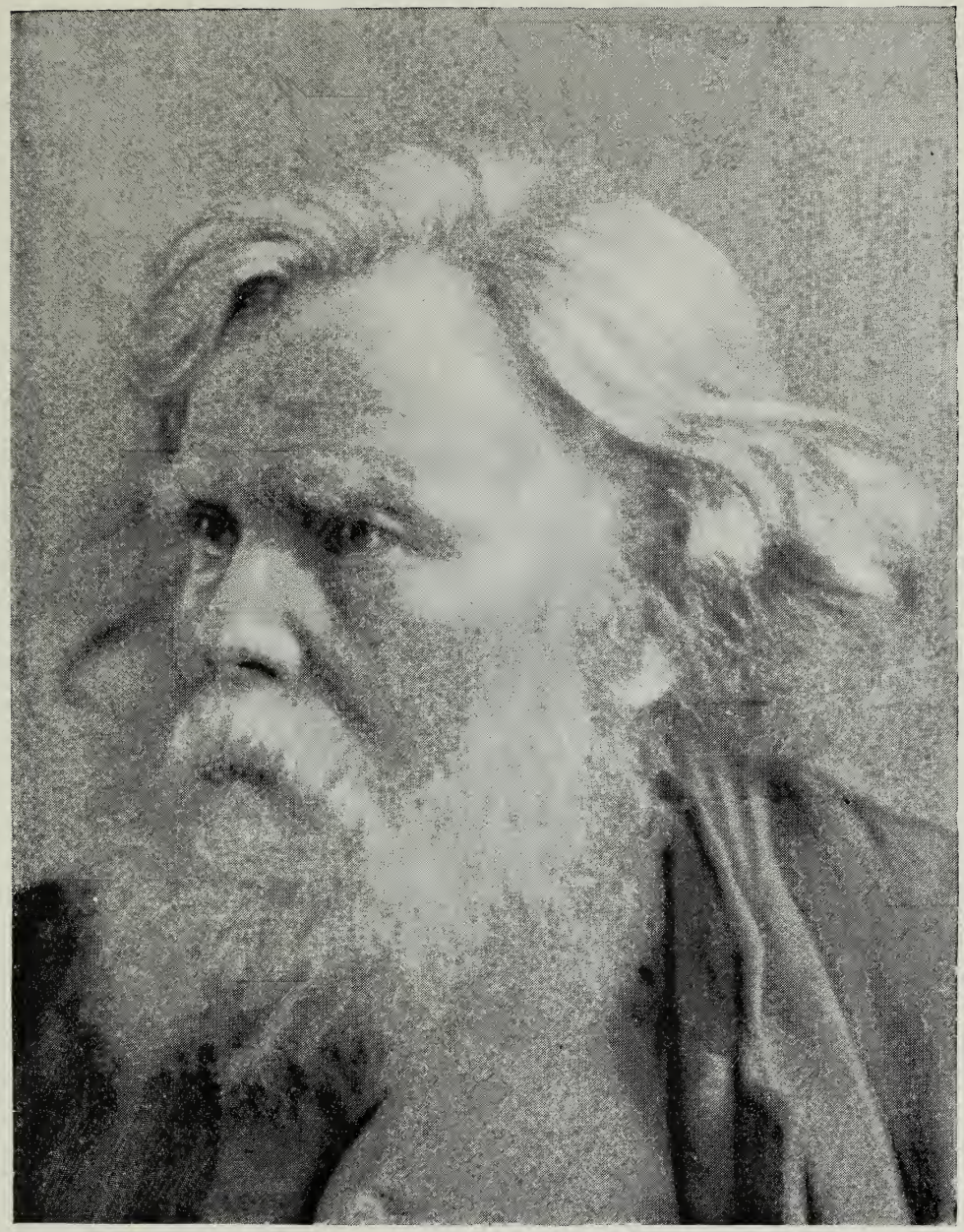
A great help in doing this will be found in the power of sharper or more diffused focus which the lens puts in our hands. Photography has drawbacks in enough ways already without allowing the lens, by using it at its full power, to be a hindrance instead of a help to our picture-making. We can get by the help of our lens the accentuation of any part of the subject which we wish to give prominence to. Francis Bate says: "The detail of each object is subordinate in importance to the impression of the whole subject." If we wish to get a photograph of a rhododendron tree as a principal thing in our composition, being near to us and near to the centre of vision, the actual leaves and branches will be of sufficient importance to be pretty clearly rendered, not every leaf or branch, but the principal group or groups. Now let a man stand before it and become the chief object of interest. At once the rhododendron becomes of minor importance, and the subdual of its detail a duty in order to bring the special object into more prominence. Here the focussing of the man must be the more accurate. But if, again, instead of the whole man it is specially his head which interests us, then the subdual of all but the head and the accentuation more or less of its main characteristics will become necessary. Such points as a fine bold eye, waves of white hair flowing backward from a noble forehead, are of importance.

We have introduced a head study taken by ourselves to illustrate this point. The subject is not actually very attractive, but has one or two fine points; these it was the object of the picture to bring out, and though this

is by no means given as a model, to one who saw the original and the picture it would be clear that some success has attended the effort. Anyhow, it demands attention only to those points which in the sitter are especially worthy of record.

We shall now see how in landscape it will be possible, when we wish to call special attention to one point in our picture, to allow the focus there to be fairly sharp, while throwing the subordinate parts into more diffusion. This will also be useful when we have not sufficient atmosphere in our subject, as we can by judicious suppression greatly increase the appearance of atmosphere in our finished print.

We have then arrived thus far, that there are to be found in almost every view leading lines, either actual ones or made by the juxtaposition of light and shade, which we must use to draw attention to the chief point in our composition by the way they lead up to it from the edges of the picture: that there must be only one main object for them to lead up to, which may not be a very big thing, but which must stand out as the most important thing in the picture; and that this is not sufficient, as a rule, to constitute a strong picture, for it will be required also that, as well as having these pleasing arrangements of lines and subject, the whole shall record some impression which nature has made upon us, some phase of her manifold life, some passing gleam or gloom which we have noted and preserved for the pleasure of those who are to see our picture, and experience the same delight in a modified degree which we did when we observed and tried to produce it.



Study of a Head. *A. H. Blake.*

CHAPTER III.

FIRST DAYS IN THE FIELD.

We can all of us remember those first days with the camera in the field. After we had spent some time and money in learning to expose and develope with some little skill and accuracy and gained improvement, we thought we would try what we could do out of doors by fields and rivers, by moor and forest, and were fired with a great enthusiasm to become landscape artists.

We went deep into the mysteries of balance, chiaro-oscuro, contrast, angle of view, until we were so bewildered in trying to do this and avoid the other, that our efforts were far worse than they had been before when we were working by the light of nature and knew no rule.

We soon found that to read about art principles by the fireside, and to put them in practice in the field, were two entirely different things.

The landscape seemed so vast and open, the light and shade not a bit like the charming instances of successful working given in the text-books, the effects so apparently tame and characterless, that we were well-nigh in despair.

Who is there who has not felt just so? It is so easy to read about, so hard to do.

In this chapter we want to make a few simple suggestions to help the beginner at just this time, in his bewilderment in the field, and to set him to work on proper lines.

And the first thing which bewilders the beginner, when

he stands out in the fields with the landscape all around him, is the fact that the face of nature is so wide and open: there is too much to choose from and so much material that he hardly knows where to begin.

We should like to tell him of a very simple dodge which we learnt years ago from a master in photography from the artistic standpoint. Let him get a little frame of brass or even blackened cardboard [though this is apt to get broken in the pocket] the same relative size and proportions as his camera, 5 by 4 for example, if he be working with a 15 by 12, or even $2\frac{1}{2}$ by 2, if the former be considered too large. Let him fit up his camera and see how much of any particular view is included on the screen, and then holding the frame before his eye, move it backwards and forwards until he sees the same through it that he sees on the focussing screen, and note the distance of the frame from his eye. If he holds the frame at that distance when he has not the camera up he will know practically how much will be included of any view on the ground glass when the camera *is* erected.

Now let the one who desires to study any landscape range over it with his frame to his eye, the sides will act as a surround, and he can study any piece, that he desires to do, and consider its pictorial qualities, quite apart altogether from the rest of the scene.

Another point which confuses the beginner in the field is that colour is so misleading. How often does it not happen that a view which looked so charming when we saw it in colour, and took it, appears weak and characterless when we see it in the monochrome of our print.

Do we then want to judge how our view will look when so translated into the one colour of our print, let us get a little bit of blue glass, which should be of the same size

as the outside of our frame, and holding the two together examine our view through them: we shall then have not only the boundaries of our subjects, but also a very good working idea of it minus colour values.

We have now gained two points: we can isolate our view at leisure, and we have no need to be led away by colour.

Let us now learn how to judge of the lines and masses of our subject, or in other words to analize the composition.

Looked at critically any scene from nature will present lines running in certain directions, a roadway, the line of a hedge, a paling, the edge of a wheat patch: they are not necessarily lines in the sense of being drawn with a pencil, so to speak, but may only result from the juxtaposition of light and shade, as in the case of a lighted edging of verdure against the background in shadow.

These lines should be most carefully used by the picture-maker to lead the eye towards the point in his composition which he wants to emphasize, and they should never be hard or straight, but soft and sinuous, leading the eye in a flowing manner in the direction desired.

How *shall* we know whether the lines are suitable? By the simple device of taking a paper and pencil and putting them down, and when we have thus put on paper the principal lines in our selected view we shall be able to judge without much trouble whether they be hard, crude and mathematical, or easy, flowing, and pleasant to the eye, and also if they serve their purpose in leading the eye towards the most important part of the composition.

Here we have gained an immense point, for we have learned to judge in a simple and efficient way whether such a piece which we have selected from a landscape, *will* make a picture or not.

If we are persuaded that the subject "won't do," let

us have the courage to leave it at once, however attractive it may be some of its points, for we shall entail upon ourselves a sad heritage of photo-phaking and afterwork if we are to make a presentable subject of it, and may, after all, have our trouble entirely for naught.

It is a rule you will find in the books that there must be only one *chief* point of interest in a picture, and it must overpower all others in attractiveness. It is not necessarily a very large thing, it may even be no object at all, but simply the juxtaposition of strong light and shade, or a mass of object in light against darker surroundings, but whatever it is you select, make it paramount and you are safe.

We have now got thus far with our picture, we have isolated it from the surrounding landscape, we have taken it into consideration in its lines and masses and apart from the interest derived from colouring, and we have seen that the arrangement is such as to give some strong point for the eye to rest on, and now we proceed to bring into play a fresh power, viz., that of focus.

If our point of interest is to be really commanding, it can be helped to be so by the power of focus, objects of less importance, further off, or nearer, can be made less sharp, *as the eye* would see them, while the principle point will be quite clear and invite examination.

This accentuation of one point may be accomplished in various ways, such as by the use of the swing back, by stopping down, tilting of camera, or whatever other way our ingenuity may devise, provided we keep true in necessary matters.

To those who can freely use the pencil all this will become much easier, because a little impressionist sketch can be made, quite in the rough, by which the general

effect of what we are going to do can be judged, and this little sketch will be a vast help, as we carry our picture through its different stages towards completion, to keep us close, in working, to our original conception.

It is no uncommon thing for a picture which was taken with a particular object being adapted and turned out as the work proceeds in something quite different from its original idea. We shall be protected from this by having to work with our little original sketch in hand.

It is much to be desired that the beginner would be content to go out five times without his camera to once that he goes with it. That he would hunt down, and sketch, and consider, with his note-book, his pencil, and his little frame till he has selected one or two strong subjects, seen them in different lights and varying conditions of atmosphere, and *then*, having fully made up his mind, go out and get them at all costs if he has to wait a twelve-month. This kind of work would be serious, and the results of it would be an education to any worker, but we may go on firing off plates by dozens at all and sundry for a good term of years without really advancing much, or turning out work that the verdict of the growing years will approve.

CHAPTER IV.

THE USE OF SKIES.

Our first piece of advice on this matter may sound rather Irish, but it is by no means unnecessary—have a sky of some sort.

However strange it may seem to have to say so, we are obliged to record after a lengthy experience in examining photographic productions, that the majority of beginners at any rate, make no effort whatever to convert the blank white paper of the upper half of their picture into some sort of a sky effect; not only so, but we find plenty of photographs sent to portfolios, competitions, and even exhibitions which are in the same predicament.

All the ideas which such workers have carried away of Nature's magnificent cloud gallery, they are content to see represented by a piece of blank white paper.

So we are right in saying that if the one who reads this little book desires to do good pictorial work at all, he *must* have clouds in, and endeavour as near as may be to produce the cloud scenery just as he endeavours to produce that in the landscape, which, when he saw it gave him pleasure and caused him to reproduce it on his print.

I need not say much about how clouds are secured.

Sometimes, indeed, clouds may be secured on the same plate as the landscape; this is, however, rarely done with satisfaction, so that they print out readily and of sufficient strength to be true to the landscape.

When by some rare chance they are secured togegether, the beginner is apt to be very pleased, as if he had accomplished something to be proud of, being unaware that very probably the clouds which he has secured are not the best possible to suit his landscape.

Let us recognize the fact that it is not always the cloudscape which happens to be there at the time we arrive with our camera to take a view that is the very best possible one to suit the landscape in line and feeling.

Seeing that there are 12 hours on the average in which clouds are able to be photographed in the day, and that they change their form let us say on an average every five minutes (of course in windy weather they are assuming fresh forms every half second), this will give us 144 different cloud effects every day, or roughly speaking, 4,300 a month and 50,000 a year, and it will be manifest that only a few of these could be considered in line and form to be quite what we desire to suit our landscape, while there is *one* perchance in all the year which is absolutely *the* best for our purpose.

Are we to suppose that we always arrive with our cameras, have them set up, focussed and our hand on the cap at the precise moment that the ideal sky for our landscape is "on"? So let not the beginner trouble his head about the sky portion when he is taking the landscape, let him expose for the landscape and leave the sky to take its chance, and it will in all probability be over done and allow the sky portion of negative to print out approximately white.

How then are we to proceed? we have recourse to what is known as combination printing, whereby clouds taken on one negative and found to be suitable in tone,

feeling, lighting, &c., are incorporated into a landscape picture printed from another negative.

It will not be necessary to explain the *modus operandi* here since this part is not so much concerned with teaching how things are done as to give hints on the art side.

The first thing for us to do will be to take a print from the landscape negative, fix and dry it, and pin it up somewhere for consideration: let us examine its masses, lines, feeling, etc., and try to get in touch with it altogether, and *then* proceed to consider what sort of sky will best suit the lighting, lines, masses, time of day and feeling. We may even venture if we can to use the brush to try the effect of certain lines and masses to represent clouds, and in this way at last come to a determination as to the kind of sky which will best suit our subject.

Perhaps the great cumulus clouds which hang on the horizon for half a summer's day, or the long wind-blown streaks of cloud, or the long bars of sunset, may be best suited.

We now turn to our box of cloud negatives which no worker will be without and which will be continually growing, and, inspecting our stock, find if possible the one to suit.

If it be not there then there is no help for it, we must go out with our camera and take the effect we want on purpose, if we can get it; *and we say this advisedly,* for the writer has often had to wait a year or two years for a suitable cloud, and he has one or two promising subjects which are waiting yet after many years. Splendid he thinks them in his self confidence, but they are unfulfilled masterpieces for want of suitable cloud-scapes which he has never got yet.

When we take a landscape and the impression of it as seen in nature is strong upon us, it is well to jot down in that notebook, which no worker is without, its strong points, what it was that especially invited us to take it, its dominant note and strong points, and the kind of sky which first impressions predispose us to think would suit it best; all this will be invaluable in after days and serve to keep us near to the feeling of our subject.

No doubt the beginner will be dissatisfied at first with his attempts at cloud printing, but let him persevere, and the days will soon be when he will never care to send out work which is a caricature of Nature, being skyless.

It may not always be necessary to introduce actual cloud forms for sufficient variety, and likeness to nature may be obtained by what is known as toning down.

To do this, we must lay our print with the landscape portion on a flat board and cover it with a sheet of glass, and having determined what kind of shape or what depth of tint in the sky is desirable, we cover the landscape portion with the focussing cloth, we work it up and down just above and below the horizon line while we allow the light to reach the sky; by allowing the light to play more on the upper than the lower portion of the horizon, we can produce a graduate effect which suits some pictures well.

Once more let it be urged that no print be sent out without some effort being made to bring the sky portion of our picture as much as may be into harmony with our landscape either by the introduction of clouds from a sky negative, which thought and experience convince us would be best suited to the scene, or by the judicious toning down which is an immense power, and a very hazardous one, in the hands of the photographer to alter

the character of his sky and make it combine with his landscape, to give effective presentment to his pictorial ideas.

CHAPTER V.

TRIMMING DOWN—WHY AND HOW?

THERE is nothing that the beginner is more loth to part with than any portion of his print. There is something almost amusing in his unwillingness to sacrifice any part, even the smallest, of his finished result. He dreads even the necessary operation of trimming, lest the knife should cut a little too far into the printed surface.

If we were curious to inquire into the cause of this strange infatuation, we should set it down to a development of that common characteristic of the beginner which leads him to set such an abnormal value upon the results which he attains in the early days of his practice of photography.

The most awful caricatures of the human form divine are handed about for admiration with unblushing effrontery, and landscapes of the most fearsome nature are considered marvels of production, and it may be taken as an axiom that men who in ordinary matters are of a decidedly humble and tractable disposition, develop extreme ferocity, like the tamest mother over her offspring, when their photographic skill is called in question, or their results treated otherwise than it seems to their proud producers they deserve.

But, joking apart, we may take as a fact that the longer we practice pictorial photography, the more we shall grow to be willing to sacrifice any part of our print

for the benefit of our finished result, and, if necessary, even to go to what seems to the beginner such awful lengths as to get a little 5 by 4 gem out of the lordly surface of a 15 by 12 print.

So we want if we can to say a few words to hasten the development of the beginner in this respect and to get him the sooner to give up his extreme fondness for superficial area, and increase his love for the main consideration—the general effect.

It is not easy to set down any general principles upon which we are to proceed to determine how much our print requires trimming off its top or sides, but we may note that whether the picture is to be cut long ways or vertically will depend as a rule upon whether the main lines or masses run up and down the picture or from side to side, and the shape of the picture should follow in the main the general appearance of these lines and masses.

The more pronounced these lines are the more it will often happen that it will be well for us to trim down, until the picture becomes in some cases a mere slip of the original.

This is one great power then that we gain, that of accentuating the lines of our picture by conforming the shape of our final result to them.

But the question will naturally be asked, "How shall I tell whether such and such cutting will be an improvement or not?

It is no doubt a questionable gain to cut up good prints just to see "how they will come."

There is, however, a good old plan, often quoted and written about, but little observed in practice, and so we again ventilate it.

Get four strips of smooth brown paper an inch or so

longer each way than the size of print which you will be called upon to consider; now place these strips over your picture so as to form a kind of Oxford frame, the sides of which can be moved in or out so as to give a larger or smaller area of print at will.

It will be manifest now that if we keep moving our strips and noting and considering the value of the result pictorially, under different aspects of this moving frame, we shall at last arrive at the one which, in our judgment, gives the best result, and will be able to trim down our print to those proportions, knowing that when we have done so we shall not be dissatisfied with the result.

And here it may be well to note in passing that such cut-down prints often look very uninviting when mounted in the middle of a space prepared for the full size which you use. To obviate this, a simple mount can be prepared of Whatman's rough-surface drawing paper by cutting a piece of tin, copper, or other metal, a little larger than our reduced print. We now cut off a piece of the rough drawing paper of the outside size required, place our little slab of tin or copper in the centre, subject the whole to strong pressure, and we shall have a sunk centre upon which to mount our print surrounded by a very effective rough-surface mount, the whole looking at a little distance like an engraving actually printed from a copper-plate block in centre of the rough surround.

This is by the way, but we believe the beginner will be glad to know that this power is in his hands to avoid the unpleasant isolated appearance of a cut-down print, say $3\frac{1}{2}$ by $1\frac{1}{2}$, upon a mount intended for a $6\frac{1}{2}$ by $4\frac{3}{4}$ print.

It is well worth the time bestowed upon it to consider very carefully how much cutting down is required, and the results will often surprise the worker.

The present writer has often, on looking at a print sent to him by the producers to get his comments, detected a want of unity about the subject, and on further consideration perceived two distinct subjects on the same plate, both with lines leading to a point of interest of their own, and capable with a little manipulation of making two separate pictures by the cutting of the original print into two halves of about equal or unequal size as the case may be.

Then, again, he has often found surrounded by heavy trees, uninteresting walls, a straight and uncompromising hedge or some such worrying feature, a little piece of the print, say, only about $2\frac{1}{2}$ by $1\frac{1}{2}$, which was in itself quite worthy of being sent in for exhibition; so let the beginner study well his print, not to see how much he can *save*, but how much without destroying the real beauty of the scene he can conveniently get rid of.

And now a few practical remarks to the beginner on how to do it. There is really no difficulty in trimming prints, and yet it often seems to present one to the amateur till he has made up his mind to master it.

First of all, we are of opinion that no special knife is needed. We have tried several ones advertised as the best to use to ensure a clean cut and an untorn edge, but they seemed to us no better, and oftentimes worse, than an ordinary penknife.

A penknife should be procured of good Sheffield steel, with large and small blades, and of a size to go conveniently into the waistcoat pocket.

You will require a cutting glass of the same size as your prints, and also a sheet of good strong, thick, smooth glass of a very much larger size than that in which you work.

Before you begin to use your cutting shape, we should recommend you to take it out into the back yard and work it well backwards and forwards on the stone doorstep until one side is thoroughly lined and marked by the process; this will ensure it not slipping on your print just at the critical moment when you are going to make the stroke with your knife.

Now, as to the *modus operandi*. Place your large sheet of glass on a perfectly level surface, and one strong enough to bear pressure, and see that it is level, or the pressure will probably cause your glass sheet to crack across, and be useless for your purpose.

Now we place the print to be dealt with, face upwards, on the glass, and place upon it the roughed side of our cutting shape.

If there are any straight lines in our composition, we had better begin cutting it at the side to which these lines are nearest and parallel.

Having got our cutting shape straight along as required, spread out the fingers of the left hand upon it to keep it steady, and taking the knife in the right hand, and placing the blade at the top, and close to the cutting shape, make one strong, clean cut to the bottom, repeating it if the trimming does not come off at once, which it should do.

We have now one side satisfactorily trimmed. We get one side of our cutting shape exactly plumb with it, and proceed to cut the next side in the same manner until the thing is finished.

Provided there are no straight lines on the print, from which we can start our operations, the best plan will be to get our glass fairly parallel to some tree or house or the sky line, and make a start from that.

The great thing to remember is that one clean, swift, strong stroke which severs at once and leaves a clean edge is what is desirable.

In conclusion, let us urge upon the beginner, never pass a print until he has tried over it his brown paper strips, and if he finds he can improve it by taking off some portion which will make it more harmonious and cause it to hang better together, trim away remorselessly, if he leave himself but an insignificant portion of the print with which he started. It is not *size* but pictorial excellence which is his aim.

CHAPTER VI.

THE USE OF A NOTE-BOOK.

We do not think that we can conscientiously believe that in the main the photographer is a very methodical person.

We have a fairly extensive list of friends in the photographic world, have been in dark-rooms innumerable, and worked in the sanctums of not a few of our leading photographers, but we are by no means sure that conspicuous tidiness has always been the leading impression that we have taken away after our visits to such places.

There are, however, notable exceptions is this respect, and judging by the tidiness of their finished work, their dark-rooms and general arrangements must be the very pink of neatness.

Of this we are certain, that there are plenty of workers whose note-books are kept with scrupulous care. We have ourselves seen a pile of note-books, the work of one man only in the course of his photographic career, beautifully kept, and affording a perfect mine of information on all and every subject that the most exacting worker could require.

We cannot all have the time or the patience to accumulate such vast stores of material as this, but we ought all to keep some sort of record of a fuller and more useful nature than those meagre particulars, such as name of plate, time of day, date, lens, etc., which the average note-book contains.

It seems to us that *such* records are of little practical value. Conditions are very rarely alike, each exposure must be a test problem in itself, and we can hardly imagine our looking back to some entry, in which the barest facts are stated, as a guide to exposing our plates in the field to-day.

The great use, of course, of such a note-book is that it enforces accurate working and observation, keeps us away from slovenly guess-work in exposing, and makes us know our failures and try to find out the reason of them. But there we think that the use of our note-book ceases, unless we try to make it something more than is at present the rule. The points which we should note and record about a picture which we take should be different from these, fuller and more useful, however excellent, as far as they go, such records may be as a check on our natural carelessness.

Of far more importance to the picture-maker are such facts as direction and strength of light, position of the sun in the sky, the general impression made by the scene, what sort of key (if the musical expression may be allowed) predominated, glad, sad, noisy and blustering, soft and harmonious, and so on. The cloud formation which seemed at the time of taking the picture to be the most likely one to suit with the landscape portion; any suggestions which may occur as to the probable shape which the final print will assume—in other words, how much cutting down will be probably necessary owing to lens difficulties or to the shape of the plate necessarily used, including more top or bottom, or on either side, than the pictorial character of the scene required—these and many other points would be with advantage recorded.

It will also be possible to make rough sketches; *how*

rough, matters not, they are simply notes for our own guidance. These notes will show leading lines, principal masses, and other points which will prove of greatest importance when the finished result comes to be considered.

Again, it may be well to note any line of poetry or well-turned phrase which has occurred to the memory as suitable to the subject in hand, or expressing its motive in terse or poetic language.

Perhaps it may be allowed to the present writer to give an entry from one of his own note-books, used formerly at Walberswick, as an illustration of his meaning, and as showing how he contemplated from the beginning the result which, however indifferently, he brought to a conclusion on the lines laid down from the first.

The subject which caught the eye was a mud creek at low water, with some stakes, possibly used at one time as a support to the bank, and an old hulk lying half buried in the mud as the principal object in the picture. The lines were fairly pleasing and harmonious, but an effect was wanting to give completeness, as the scheme seemed hardly strong enough, though pleasant in itself, to make a picture. Presently as the sun sank lower and lower the edge of one bank began to be touched with light, the shadows under its overhanging parts got deeper, and the idea came, "Catch this just before the sun sets, and you will have a kind of 'Last Gleams' subject."

Moreover, there seemed to be harmony of feeling between the sinking tide, the old boat which has seen its last day's work, and the waning light of closing day.

So the subject was taken just at that time of the evening, and it was remembered that often at such an hour there are on the horizon great cumulus clouds, whose

bases are lost in haze, while their upper edges are touched by the light thrown by the rapidly sinking sun.

Now for our note-book entry :

Walberswick, June 24th.—(1) "Last Gleams." Very low tide in the creek. Taken at 7 p.m.; strong light from the right side; sun getting low down; exposure, 1 sec.; open lens, Ross R.S. 18 by 16.

And added afterwards :

It seems as if cumulus clouds just tinged by low sun on right would suit here. These clouds often so seen near sunset.

So far so good. Now one was looking out for the said cumulus clouds to suit this subject, and another which we had had by us for some time, and which has never yet seen the light, called "In Time of Drought."

Later on we find another entry :—

Walberswick.—(5) Cumulus clouds over the sea, suitable to "In Time of Drought"; sun low down, right; perhaps also good for "Last Gleams."

These clouds were used for "Last Gleams," and the picture was exhibited with success.

We hope the reader will excuse these personal illustrations in order that we may make our meaning clear.

It will be seen then that our note-books, so far from containing merely records of lenses, dates of exposures, and other technical matters, may be real aids to picture-making, recording the impression which a scene made upon us at the time, the direction and power of light, and the general line of treatment which will probably be the best, and not only so, but also the cloudscape which seemed to us at the time as most likely to be in harmony with the subject.

It will be, moreover, a record of the cloudscapes which we do take, the direction of light, the time of day, and prevalent feeling, and other matters likely to aid us in using such skyscapes as we have to the best advantage.

There are several other uses which we may put our note-book to which may be briefly dealt with.

Many a time it may happen to us to observe a beautiful effect in nature which we should like to try and preserve, but we have not our camera with us at the time, but if we always take our note-book with us, we can make some sort of record of it in words, and possibly in line and mass if we are anything of draughtsmen, and this will serve not only to impress the effect upon the memory, but also to recall it as we look over our note-book in days of leisure.

The present writer has also been in the habit of pasting into his note-book, cuttings from papers, or magazine illustrations of paintings and etchings, paragraphs, lines of poetry which seemed to him to give food for reflection and suggest possible photographic subjects in the future, or make clear to him some aspect of nature which before he had not seemed to seize the spirit of; and it has not unfrequently happened that such pictures, paragraphs, or lines of poetry read on days of holiday from the note-book have germinated in the mind and resulted in the production of a picture more or less pleasing.

As many of the present writer's photographs have been reproduced in magazines and journals, he has cut out such illustrations, as well as the letterpress dealing with them, and pasted them into his note-book opposite the page in which his rough notes of the inception of the picture were entered, and it is very pleasing, how-

ever little may have been the success attained in the opinion of the producer compared with the idea with which the entry was made, to see the finished and published result appended.

It is needless to remind the reader what a real pleasure such a note-book is, and what a companion it soon becomes; it is a record of no dull and conventional kind, filled with dry details which can hardly ever be put to any future use, but is replete with interest of various kinds.

It records the impressions of nature's beauties on many a holiday excursion; it gives quotations of poetry and sentences from many books, the opinions of many men. It has the records of our own work in its inception and the result to which we attained; it records our own observations of Nature's passing beauties and is a constant companion and friend.

No walk will be dull with our note-book in our pockets, for there will be something to record, not only in the pleasant country, but in the walk along the crowded street. Each illustrated paper may contribute something to our store, and swell the wealth which we treasure up in our note-books for future use.

In conclusion, may we be severely practical. "What sort of note-book do you use, and where is it obtainable?

Ours are made for us.

We buy some sheets of ordinary cartridge paper, procurable retail at about a halfpenny a sheet, cheaper if bought in any quantity. We determine the particular folded size which will suit our purpose (our note-books vary in size and bulk, but *always* are adapted to the side pocket), and we then visit a certain little working bookbinder of our acquaintance, who cuts our paper to size, and binds

in cheap cloth, with two little pockets for maps, etc., in the inside of the covers, for a few pence each, and then we are set up for a time till that particular note-book becomes too apoplectic any longer to safely travel about, and gives place to its successor.

CHAPTER VII.

SOME BOOKS TO USE AND LOVE.

It is often urged as one of the chief attractions of photography that it is essentially an out-of-door pursuit; that we are, above all things, lovers of Nature and students of her rivers, fields, and skies.

This is most true, but it is only half the truth.

We are students indoors as well as out, and the work which we do in the one place supplements and assists that which we do in the other.

The picture-maker is, we believe, most frequently a diligent reader of books bearing on his subject, not only of a technical nature, that he may learn to use his tools, but artistic as well, that he may learn to use his eyes and know what to use his technical skill upon. The works of H. P. Robinson and A. Horsley Hinton are well known to him and diligently perused.

He may not, however, have the opportunity of knowing of other books not showing evidence in their titles or their aim of any direct bearing upon photography, and yet able, if we peruse them well, of rendering to the "picture-maker" most valuable assistance; and we can give no better advice to the earnest beginner under this head than to begin at once to make a little shelf of such works for present and future use.

We say to the picture-maker and the *earnest* beginner advisedly, for we do not think that they will be of much

use, save incidentally, for workers in other branches of our subject.

Granted then that there are those to whom they will be useful, what books shall we recommend in this brief article as likely to form a good beginning for the formation of such a small library?

There is a cheap little work, costing about 1*s.* or 1*s.* 6*d.*, called "The Naturalistic School of Painting," by Francis Bate, which is a most readable and useful little volume. It is an appeal to picture-makers to be diligent students of nature, to watch her carefully and lovingly, and they will receive a great reward. It explains the meaning of the so-called "impressionism" with clearness, has some valuable hints on the reasons and methods of suppression of focus, and is plainly written by an ardent lover of Nature who longs to call others to that study of her works and ways which has become to him a passion.

The last chapter has some beautiful thoughts on our love of Nature. How few know *how* beautiful she is, or reflect even some of her loveliness in their pictures!

Time and patience are required to learn Nature's secrets. She has to be sought and wooed with patience and great love, that her secrets may become our knowledge. The progress in art depends upon the artist's study of Nature. Art results from the pursuit of Nature in faithfulness and love, for to know Nature it to love her increasingly.

There is one school where we may all be free students. There is one inexhaustible bank of knowledge upon which we may all draw for ever as largely as we like. The school is one which beyond all comparison with all others has "turned out" the most successful students.

There is one requirement of the scholars which it is necessary to attend to—absolute truthfulness. *The name of the school is Nature.*

The present writer has for years found a little work by Wyke Bayliss entitled "The Higher Life in Art" (6*s.*, for 4*s.* 6*d.*, Bogue, St. Martin's Place) of the greatest interest and value. This is written by an artist for picture-makers. It deals with the problems which confront such a worker, and the spirit in which he should face them.

The photographer will not rise from the perusal of this book without being thankful for even that medium of expression to help him to spell out some few syllables of Nature's great secrets. The life which he aims to set before his readers is one which brings him into direct and sympathetic relationship with Nature. There is no mistaking the grip with which she holds her devotees. How little do we know of her. She is, as it were, a mighty organ upon which we can play a note here and there. A flute voice answers us, a vox humana, perhaps even a vox angelica; but we do not know the instrument until the master musician sits down before it and we hear the thunder of the diapason, the rush of mighty harmonies and tender strains of melody. And *art* is our master musician'!

A somewhat more extensive book in size, though hardly dearer in price than the one just mentioned, is "Thoughts on Art," by that well-known writer-painter, G. H. Hamerton, which consists of some 400 pages of smallish print. There are in all some seven-and-twenty chapters, and to give their general scope it will suffice to mention some of the subjects of its leading divisions.

The relations between photography and painting, fame,

art criticism, word painting (a most valuable chapter), the artistic spirit, on artistic observation of Nature, picture framing, etc.—here, to mention only a few headings, is the indications of a large bill of fare, and plenty likely to interest and instruct the photographer.

The motto of the whole volume is "Happy is he who at an early age knows what Art is," and in the introduction the writer tells us that that is the object of the volume, to explain to us in some measure "What Art is."

Although they have no direct bearing either upon Art or photography, the works of Richard Jefferies, of Coate, near Swindon, must be added.

Do our readers know Jefferies' works? If not, they have been deprived of one of the greatest treats in the English language to the lover of Nature. He was full of the poetry of the country, and could interpret its feeling and describe its charms as few men of his time have done. Some would tell us that the works of Jefferies are but a dry chronicle of Nature's diary, but the ardent picture-maker will know better, and often, as he reads, will long that he was there, camera in hand, to try and get what is so lovingly and so graphically described.

Take, for instance, such a passage as that in which he describes the reservoir, more poetically styled "the mere," embossed amongst the pleasant meadows and overhanging branches of the spreading trees.

Here in the old boat he travelled "past the low but steep bluff of sand rising sheer out of the water, past the barley that came down to the willows by the shore, ripe and white under the bright sunlight, but darker under the shadow of the elms, with a pale tint of amber. Past broad rising meadows, where under the oaks on the upper ground the cattle were coolly lying out of the

sultry heat. Then the barren islands strewn with stones and mussel shells, glistening in the sunshine, till presently we floated into the bay beneath the firs. There a dark shadow hung over the black water—still and silent, so still that even the aspens rested from their rustling."

In page after page pictures are drawn which supply the worker with ideas and suggestions, though they may not afford the material of pictures.

But in speaking of books for the picture-maker's library, we shall not forget works of poetry. Who would be without the suggestive and marvellously true word-painting of Tennyson, full of expressions and phrases which seem word-cameos from nature? Who would be without his penetrating, always truthful descriptions of scenery, whether of the rigid wolds of Lincoln or the "rinkled sand" of the sea shore?

Then Cullen Bryant, with such poems as "Autumn Woods" or "The Cloud"—

> "Beautiful cloud with folds so soft and fair,
> Swimming in the pure sweet air,
> Thy fleeces bathed in sunlight, while below
> Thy shadow on the vale moves slow;
> Where 'midst their labour pause the reaper train,
> As cool it comes along the grain."

Or the works of the present Laureate, full of the spirit of English rural scenery, and marked by an intense love of Nature as she appears in all her varied moods to us in this clime of ever-changing seasons.

The lover of picture-making then will be a lover of good books too, and take delight in getting his little shelf full of these works, which are not only the solace of an

idle hour, but constant companions, pointing the way to a keener interest in Nature the great teacher, and a more open eye for her delights.

CHAPTER VIII.

THE HELP OF THE SWING-BACK AND STOPS.

Though the title of the present chapter might seem to have little to do with artistic photography, such is not the case, for the swing-back is one of the parts of a camera which is most flexible in the hands of the artist, and one which enables him to put his individuality into his work, as by a judicious use of it he accentuates or diffuses his focus.

There are many uses for the swing-back.

Let us imagine first of all that we are required to take a building or a church. We find on placing our camera in position that, though otherwise all is as we desire it, the upper parts of the building or the church tower are just cut off. This will never do; so the rising front is lifted as far as it is possible, and yet the whole church is still not included on the screen.

What is now to be done? It will be necessary to tilt the camera until we get in the whole of the building.

Now, again, considering the image on the ground-glass, we find that though we have been successful in getting the whole of our subject in position, yet the doing so has had a disastrous effect upon the parallel lines of the building, giving the walls a V-shaped appearance, and the whole conveying to the mind an idea of extreme instability.

By what means should we remedy this fatal defect?

Take the ground-glass in hand, and swing it backwards

and forwards until the lines resume their vertical appearance; in this way it will be found that all convergence has been successfully removed.

A very useful little instrument is to be obtained which, placed upon the side of the camera, will indicate when the ground-glass is vertical.

But now another difficulty meets the beginner. Parts of his building are not in focus, and so matters are still far from satisfactory; but the insertion of stops till the desired sharpness has been obtained will obviate this difficulty.

But it is not only in architecture that the swing-back is of such great use. The landscape worker will find it a great addition to his powers in the field, especially in relation to artistic work.

A good foreground is very essential to the success of a photographic picture, but it will often be found that to get the foreground and distance in proper focal relation to each other is not easy.

Suppose there be few straight lines in the composition, it will be found quite possible to move the swing-back in such a way that the foreground and distance can both be got fairly into focus together without the use of a small stop.

This has two advantages, for we dispense with smaller stops which destroy atmosphere and seem to glue all the different planes together, and find that we can still give short shutter exposures if necessary, which would be difficult perhaps with strong foreground subjects stopped down when there is a movement of trees, or water, or quick-drifting clouds blown by the wind across the heavens.

But we have left ourselves scant space to speak of the use of stops, which the little perforated metal discs, supplied to the beginner with his lens, are called.

Stops are of three kinds—the "Waterhouse" stop, which is a metal disc supplied with lens and inserted into a slit in the brass-work of the lens between the glasses. A second kind, called "rotatory" stops, have a revolving disc, with the various sized perforations in the brass-work; while the third kind, called "iris" diaphragm, consists of plates overlapping one another, and making the aperture larger or smaller as revolution takes place.

The stop performs several offices; it enables different planes of the picture to be brought into focus at the same time, and it also causes the picture to be quite sharp, even to its extreme edges. We do not say it is desirable to use this power placed in our hands on all or even many, occasions, as beginners are very apt to do, but we ought to know what power we have, and we can then intelligently use it as we have occasion.

The smaller the stop used, the darker, of course, grows the image and the longer the exposure, it being taken as a guide to exposure that each smaller stop increases the exposure twofold.

Should the beginner feel uncertain as to what is meant by the use of stop to bring planes into focus, by the following experiment he will easily find out:—

Let him place a group of figures some little distance, say twenty yards, from a bank of trees and shrubs. Let the figures be dispersed thus: some sitting on a rug on the ground, some sitting on a bench behind these, and others standing somewhat further back still behind these. There will now be four planes or distances in the picture—the row sitting on the ground, the row on the bench, the standing row, and the trees and shrubs in the background.

It will probably be found that if the first row be focussed,

the back row will not be sharp and the background quite astigmated; if the background be focussed, the figures in front will be, on the other hand, quite indefinite.

Now let us focus the row standing up until we get them quite sharp, and then proceed to place *f*/11 in the slot; if this be not successful to bring all into focus, then *f*/16, and so on until all the rows of figures and the background are quite sharp.

We have not here discussed the question whether it is desirable that the background should be sharp in such a case, but only used the group as an illustration to explain the action of stops in sharpening up several planes at once.

It is far better to focus thus for the middle distance and so sharpen the distance and foreground at the same time, than to focus the foreground and sharpen up the distances from that, and manifestly a larger stop will suffice for our purpose, which is a consideration when there is movement possible in figures or foliage, which might spoil our picture.

The same remark applies if you have to tilt the camera and use the swing-back as mentioned above to get in the whole of a building, so that the top and bottom are greatly out of focus.

In a case like this do not try to get the top or the bottom sharp, but the centre, and gradually sharpen top and bottom at once by the introduction of stops, in which way you will manage with a much larger one than you otherwise could, and decrease, consequently, the necessary time of your exposure.

There is another movement which is not found in many cameras, nor often used, called the side-swing, by which without the use of stops we can do the same sharpening of objects which are out of focus across the picture as we can with the swing-back when they are the upright way of the

camera. If you have it so, use it; but if you have not got it you need not regret it.

It ought not to be taken for granted that if a subject be fairly sharp the introduction of a very small stop will necessarily give extreme sharpness. It will be found in practice that it will often throw out the existing focus, so that the picture should always be well examined after the introduction of the stop and before the plate is exposed.

The earnest landscape worker will soon find what power these two adjuncts to the camera place in his hands; how he can accentuate and suppress focus, sharpen or throw into indistinctness various portions of his picture as his taste and judgment dictate.

He will find that the more he is accustomed to the use of these helps the more power will he get out of them to vary his results to suit his artistic judgment.

CHAPTER IX.

ARCHITECTURE AS A SUBJECT.

It is a grand thing for any beginner wandering restlessly about in search of "subjects," and having little aim and method, if he turns his attention in serious earnest to architecture as a hobby.

Here there will be no lack of material upon which to exercise his skill, and little fear of going wrong, as both artistically and technically he will get much more from the same amount of trouble out of architecture than he will out of landscape, and will moreover find that as a rule photography is able to do much more justice to his new hobby than it was to his old one, the introduction of art into landscape photography.

To make a beginning, take the nearest village church if it be of any age, and from books and local authorities find out its age, its distinctive features, its chief attractions, any curious or interesting details which it possesses, and begin by photographing any *outside* detail which may be of special value—a doorway, a buttress, a gargoyle.

We say outside advisedly because the inside photo graphy is a little more difficult on account of the exposure, but if the chapters which we have already given in this little book on "Exposure" and "Interior Work" are mastered the exposure ought not long to offer many difficulties.

Let us say, for instance, that you come across one of

those old wooden porches which are so artistic a feature of some old country churches. You can consider from what point of view and in what lighting you will get the distinctive features to show best, bringing out the ancient woodwork, the lichened stone foundations, the old wooden seats, and the ironwork of the ancient door.

Having secured some outside work, we next try our hand at interior detail.

Do not let any beginner feel vexed that we ask for *detail*. There are hundreds of "views" of our principal cathedrals and parish churches, artistic or otherwise, but the beautiful or curious details of the work in them, placed there with such loving skill by past workers, is rarely taken, and often-times escapes the notice of all but the initiated few.

There is no real reason for this. A little book, which we could give a name to, to any who cared to ask for it, would give necessary information to enable anyone who before knew nothing, or next to nothing, about architecture, to take an intelligent interest in these matters, and know in some little degree, at least, what to look for and what to take.

Look at this little carving in the stonework of this buttress. Here it looks like a monogram surmounted by a sort of crest. Let us take it, at any rate, and when we have our negative developed and a print taken, let us ask one more knowing than ourselves on these matters what it is. He will tell you that it is the monogram of the Blessed Virgin Mary, containing the letters of her name in Latin, MARIA, surmounted by a crown, according to the doctrine which gives her the dignity of the "Queen of Heaven," and so this little piece of stone carving, only about a foot square, contains in itself, indeed, a mine of

archæological and theological interest, and carries one back to times far different to our own, and bears recorded by the chisel "the faith of our fathers."

Again, look at this quaint, almost grotesque figure perched up on high, clad in mediæval armour, and bearing in his maimed hand a bell. If you notice carefully you will see that this hand and bell are worked by a string, and that he evidently subserved some useful purpose in bygone times. This is a jack-o'-the-clock, and his business was to ring his bell when the hour of service arrived, so that the congregation might be duly seated in their places, and the churchwardens might do their legal duty, after attending to the accommodation of the worshippers, and go out into the streets and roads and bring in all stragglers who were showing any disposition to spend the Sunday otherwise than in the worship which the law required of them.

Again, it may be remembered that there are, roughly speaking, five styles of architecture observable in English churches—Saxon, Norman, Early English, Decorated, and Perpendicular—and that in each of these styles there were distinctive windows, doors, spires or towers, buttresses, etc.

Supposing that the beginner should make up his mind to know something of the different kinds of windows which obtained in the various periods of Gothic architecture in England, and to keep a book divided into five parts in which the various prints of the examples which he was able to obtain were pasted, need it be pointed out what a vast increase in his knowledge of and interest in the old churches of the district would result?

Perhaps he would find one (he would hardly be likely to find more) instance of a Saxon window, roundheaded and showing the long and short work. There may be

one or two instances of Norman windows deeply splayed, and with very small openings, widening very considerably on the inside. No doubt he will find several instances of the English window, long, narrow, and with the pointed arch.

In some parts of the country the worker will get beautiful instances of the Decorated style, and as to the Perpendicular, that is of so late an introduction and so plentifully distributed that he will be sure to find abundant examples wherever he may happen to live.

It is well to point out that not only is the worker getting plenty of "subject," and much interesting information for himself, but he is also, in reality, useful in what he does, which cannot be said in the case of a vast number of portrait and landscape works, in obtaining a record of old features in buildings which time, or the hand of the ruthless restorer, may soon make a thing of the past.

If there be added to the ordinary power of negative making and printing the ability also to make lantern slides, the study of the beginner will be still more fruitful, for now he can be of use to the lecturer and enable him to throw upon the screen examples of the different kinds of architecture about which he discourses, to show detail in windows, doors, arches, etc., of the different periods through which he takes his hearers.

If the beginner is working with a half-plate, it will often happen that in a view of a church there will be a little piece of detail, such as a window or doorway, about 2 in. square, which can be used *out of the whole negative* for making a lantern slide by contact, but as a rule it will be better to work quarter-plate with two or three lenses, or, better still, actual lantern size.

For this size it may be necessary to have a special

camera made, but as the size is so small, the cost will not appear excessive to those who reckon the price of their 15 by 12.

Special lenses, also, of such focal lengths as will enable detail, either at long or short range, to be got upon a plate lantern size as may be desired.

If any beginner, then, is fishing about for a hobby and wants to settle down to work which will increase, not diminish, in interest as he gets deeper into it, which will not only be a pleasure to himself but also an actual boon to others in recording facts which might otherwise be lost without any representation being procured, he may well take up the subject of church architecture, and try to get the same art into his pictures here as he did before perhaps into his open landscape work.

THE END.

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